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RECENT ADVANCES IN THE PHYSIOLOGY OF VISION

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Section I: Measurements of the Living Human Eye by Means of X Rays

Rushton (1938) appears to have been the first to use *x* rays for making measurements of the living human eye. He measured its antero-posterior diameter. Goldmann and Hagen (1942) employed Rushton's method, and themselves measured the same diameter in the case of 10 emmetropes, 7 myopes, and 1 hypermetrope. They also elaborated the method in a very ingenious way by causing two pencils of *x* rays to strike the retina near the fovea; this enabled them to determine the more important optical constants of the eye. This method—together with some of the results which they obtained—will be reviewed in this section. Recently Sorsby and O'Connor (1945) have also elaborated the method so as to measure not only the antero-posterior diameter but the transverse and vertical diameters as well. Their results will also be reviewed here.

The Methods of Goldmann and Hagen

Knowledge of the optical constants of the eye finds many applications, both practical and theoretical. For this reason several attempts have been made to determine these constants both for the normal human eye and for myopes and hypermetropes. The older methods were laborious and their accuracy was open to doubt. Recently a more reliable method has been developed by Goldmann and Hagen by the use of *x* rays. So far, two properties of the eye have been determined by them—the length of the eyeball and the total refraction of its lens-system. The first of these is measured as follows: A beam of *x* rays is passed through a slit-shaped aperture in a stout metal plate. The narrow ray thus produced is caused to fall on the observer's dark-adapted eye at right angles to its optic axis. A ring of light is seen concentric with the fovea. As the beam is moved towards the back of the eye this ring of light gets smaller and smaller until it shrinks to a point. The beam now coincides with the most posterior part of the retina. The whole instrument is then moved forwards until the beam illuminates the anterior part of the cornea, and the movement necessary to do this is carefully measured. Since *x* rays are not deflected by living tissues the length of the eyeball is accurately determined in this manner.

The total refraction of the eye is now ascertained by the following technique: Two narrow beams of *x* rays, about 5 mm. apart, are projected in at the front of the eye just below the line of sight. The observer sees two bright images apparently projected on to a screen which has been placed in front of him. Two narrow beams of light are projected by an optical lantern on to this same screen and the beams are adjusted until they coincide with the *x*-ray images. The exact distance of the screen from the observer is carefully measured, so also are the distances between the two lantern beams. The following formula is now used:

$$\text{Total refraction in dioptres} = \frac{1000 \times \text{distance between lantern beams}}{\text{Screen distance} \times \text{distance between } x \text{ rays}}$$

In the following table the results obtained by Goldmann and Hagen are compared with those of two observers—Tscherning and Gullstrand—who employed the older methods referred to above.

	Goldmann and Hagen	Tscherning	Gullstrand
Length of eyeball ..	23·40 mm.	24·75 mm.	24·00 mm.
Total refraction ..	59·22 D	58·38 D	58·64 D
Nodal distance ..	16·88 mm.	17·13 mm.	17·05 mm.
Posterior focal distance	22·53 mm.	22·89 mm.	22·78 mm.

It will be seen that there is remarkable agreement between the results obtained by the three observers. The mean values are as follows: Length of eyeball = 24.05 mm.; total refraction = 58.75 D; nodal distance (the distance between the retina and the posterior nodal point) = 17.02 mm.; the posterior focal distance = 22.73 mm. In every case the mean values are very close to those given by Gullstrand.

The Methods of Sorsby and O'Connor

These observers measured the three principal diameters of the living human eye. After 15 minutes' dark-adaptation the observer's head is clamped. A slit-shaped beam of *x* rays is now adjusted until it is tangential to the retina first on one side and then on the other. The two positions of the beams are recorded on a photographic film introduced in front of the eyes. The following details of some cases were kindly sent to me by the authors:

Case	*X*-ray Measurements (mm.)			Refraction	
	Transverse	Vertical	Axial	Vertical	Horizontal
1	21·5	20·5	22·0	0	0
2	23·5	23·0	23·0	+ 1	+ 2
3	24·0	24·5	25·0	− 3·5	+ 2
4	23·5	24·0	23·0	+ 1·0	+ 1·5
5	24·5	25·0	28·0	−16·0	−14·5
6	24·5	23·5	24·5	0	+ 0·5

It is interesting that the one case of high myopia shows a long axis. Prof. Sorsby has informed me privately that a second case of myopia was found to have an eyeball of normal length. This method will clearly be of great value in locating foreign bodies opaque to *x* rays in the eye.

Section II: The Micro-electrode Experiments

Of all the advances made in recent years in the physiology of vision possibly the least expected, and the most far-reaching, are the researches of Granit (1943) on the mammalian retina. The three-colour theory of Thomas Young was so well known, and seemed to be so firmly established as the result of the work of Wright, his co-workers, and many others, that any discovery contrary to it appeared to be most unlikely. It had been known for some time that there were defects in the three-colour theory;

but that the theory could be wrong in essential features was certainly not expected.

The theory apparently has had its day; but during its life it has served a very useful purpose, for it has been the inspiration of much research work and has formed the basis of a convenient way of designating colours. It has also provided a good classification for colour-blind persons and has indicated practical methods of colour photography and cinematography. It should be pointed out that, although the three-colour theory is now in peril, none of the practical applications which have developed from it is in a similar plight. We can still enjoy technicolour or say that a particular patient is red-blind.

Granit's experiments depend on the well-known principle that when a sensory nerve conducts impulses it undergoes changes of electrical potential. The retina of an animal is exposed and a very fine electrode is placed in contact with a single fibre of the optic nerve. This electrode is then connected to a high-gain amplifier and loud-speaker. When the rod, or cone, sense organ connected with the nerve fibre in contact with the micro-electrode is affected by light, changes in potential will be set up in it during conduction, and these will be shown by clicks from the loud-speaker. The stronger the light the more frequent the nerve impulses and the more numerous the clicks. As would be expected, in order to make connexion with a single optic-nerve fibre a very fine micro-electrode indeed must be used. Lastly, the experimenter himself must possess great skill and an aptitude for this kind of work. This is briefly the technique employed by Prof. Granit. Actually the light is not varied in intensity, but in wave-length, in order to determine the response curve of the particular retinal receptor under investigation. When the curve for one receptor has been determined the electrode is shifted slightly so as to make contact with a neighbouring nerve fibre, which connects to another receptor. The taking of the response curve is then repeated.

When a large number of response curves have been obtained in this way they are sorted into groups, and usually as many as eight types of receptor are found to be present. Type I, which has a broad response curve, is stimulated by nearly all parts of the spectrum. This Granit calls a "dominator." The remaining seven types, all of which have narrow response curves, are stimulated by a part of the spectrum only. These Granit calls "modulators." There is one type of modulator for the orange, another for the yellow, three types for the different shades of green, and two for the blue. These results have been obtained on experimental mammals. If man were to be similarly tested it is probable that much the same result would be obtained in his case. Possible methods of testing this point are being investigated. The total number of types of receptor may well differ in man from other mammals, and their response curves may be different also. Thus from observations in man's colour sense one would expect there to be a type of receptor for the red part of the spectrum in addition to those that have been mentioned above.

While these points of detail remain undecided a temporary name is required to specify this theory of vision. The term "polychromatic" would seem to be not inappropriate. Suppose this theory to be substantiated for man as a result of further research, should we be better off than before? The answer to this question would appear to be "yes," for we could explain on this theory many visual phenomena which the old trichromatic theory is unable to do. Moreover, we should have a more precise method of classifying colour-blind patients.

Section III: Visual Acuity using Lights of Different Colour

König (1894) and Roaf (1930) found that when the acuity of the eye was determined, using lights of different colour, the results for blue lights were less good than those for other colours. Roaf explained these observations by assuming that rods are used in vision when blue light is falling on the retina. Since there is a rod-free area at the centre of the fovea this will account for the poor acuity by blue light. Shlaer (1937) advanced the hypothesis that the acuity of the eye is limited by the size of the pupil when it has a diameter of 2.3 mm. or less because, as is well known, diffraction effects occur at such a pupillary opening. If Shlaer's hypothesis were correct there should be better acuity by yellow light than by red light, better acuity by green light than by yellow light, and better acuity by blue light than by green light. Shlaer, Smith, and Chase (1942) investigated the acuity of the eye, using lights of different colour, but their results did not confirm the above hypothesis. It is true that there was some slight improvement on passing from red light, through yellow light, to green light, but after that there was a marked deterioration. With a Landolt C test object there was little difference of acuity when lights of different colour were compared with white light.

Last year I investigated the effects of coloured lights, using certain letters as my test objects, and this year I repeated the experiments with Landolt's C test. In none of my tests was there any well-marked difference between white lights and coloured lights. The results of Shlaer and his co-workers, and myself, are summarized in the table below:

Observers	Visual Acuities using Lights of Different Colour				
	Test Objects	White	Red	Yellow-green	Blue
Shlaer *et al.*	Grating	1	0·91	1·02	1·00
	Landolt's C ..	1	1·00	—	1·00
Hartridge	Letters	1	0·82	0·96	0·77
	Landolt's C ..	1	0·86	0·99	0·91
Mean		1	0·90	0·99	0·92

Great care was taken in my experiments to see that the coloured lights were of the same visual intensity. This is important because visual acuity improves as the brightness of the light increases. The conclusion that the acuity of the eye is substantially the same for white and for coloured lights not only fails to confirm the two hypotheses mentioned above but also puts great difficulties in the way of the usual form of the three-colour theory of Thomas Young, according to which certain retinal cones respond to red, others respond to green, while a third set respond to blue.

If these are all distributed according to a regular plan one would expect the acuity of the eye for red, green, or blue to be very definitely less than that for white, as a larger test object would have to be used with the former in order that discrimination may occur—because of the considerable distance between a photoreceptor of one particular kind and the next one to it of the same kind. On the contrary, when white light is in use all photoreceptors respond, irrespective of their peculiarities. In order to account for these results on visual acuity, and certain other properties of the eye which are at variance with the usual three-colour theory, an alternative theory called the cluster hypothesis has been advanced. This is dealt with in the next section.

Section IV: The Cluster Hypothesis

According to this hypothesis, when structures approximately similar in size are distributed in a random manner those of similar property tend to form small clusters or aggregates consisting almost exclusively of structures of one kind. Thus, according to this hypothesis, if a small quantity of starch be divided into three roughly equal parts and the first part be stained red, the second stained green, and the third stained blue—if then these three parts are intimately mixed together and are examined, clusters of red grains should be found in one place, clusters of green grains in another place, and clusters of blue grains in a third place. These clusters are easily seen if a piece of Lumière screen, prepared for colour photography, be examined under a low-power microscope.

According to the cluster hypothesis, the retinal sense-organs are arranged in a random manner and accordingly form clusters: in one place there is a collection of red receptors; in another place a collection of green receptors; while in a third place there is a collection of blue receptors. When high acuity is wanted with red light a red cluster is used for purposes of observation; when the light is green it is a green cluster which is employed; and when the light is blue a blue cluster is brought into play. With white light, on the contrary, it is either a green cluster or a mixed cluster which is employed.

This arrangement of the retinal receptors into clusters accounts for the high acuity of the eye using lights of different colour. It also accounts in a satisfactory manner for other

properties of vision which up to now have been difficult to explain. One of these is the retinal direction effect of Stiles and Crawford. This aspect of the cluster hypothesis is to be dealt with in detail elsewhere.

Using as test objects extremely small disks, it has been possible to identify the position of some of the clusters near the centre of a human fovea. This matter is also to be considered in detail elsewhere.

Section V: The Antichromatic Response

Physiologists have long been puzzled by one property of the lens-system of the eye—namely, the absence of colour from the images of colourless objects which it produces on the retina. A lens employed for photographic, microscopic, or similar purposes has to be achromatized by the use of convex crown-glass lenses in conjunction with concave flint-glass ones. Such combinations of lenses bring light of different colours to the same focus. Such is not the case if a single lens, either of flint glass or of crown glass, is used by itself. Thus a convex lens brings the violet rays to a focus first; then follow in order the blue, the blue-green, the green, the yellow, the orange, and, lastly, furthest from the lens, the red. It has been shown by experiment that this is the order of the colours in the case of the eye. It has also been shown that it is the yellow-green rays that are sharply focused on the retina under normal circumstances. The consequence is that the orange and red rays, which have not yet come to a focus, form blurs on the retina; so also do the violet, blue, blue-green, and green rays, because, having come to a focus, they diverge again before they reach the retina. The image on the retina of a small bright white light on a black background will thus take the form of a yellow spot of high intensity surrounded by a blue halo or fringe which consists of the unfocused colours. So far theory and observation have been in close agreement; but now they differ to a startling extent. For when the observer looks at a small bright light he does not see either the yellow spot or the blue fringe. What he sees is the white light unaccompanied by any colours. Similarly in the case of other objects, both black and white: when these are looked at, coloured fringes—yellow or blue—should be visible owing to the chromatic aberration of the eye. But observation shows that in fact all such effects are conspicuously absent. In the past numerous hypotheses have been advanced to explain the absence of chromatic fringes from vision, but none of these has been able to stand critical examination. The correct explanation has been advanced recently—namely, that the spurious colours of chromatic aberration are eliminated by a nervous process, which has been called the antichromatic response.

A grating test object is prepared consisting of two parts—the upper part of alternate black and white stripes, the lower part of similar blue and yellow ones. The black and blue stripes are in the same straight line; so also are the white and yellow ones. An image of this test object is produced by a simple convex lens of about the same focal length as the eye, and this image is examined by a low-power microscope which magnifies 80 to 100 diameters. In consequence the observer sees an enlarged picture of the test object. He finds that both parts appear blue and yellow—one part because these are the actual colours which are present, and the other part because of the colour effects produced by the chromatic aberration of the lens. Unfortunately, no satisfactory method has so far been devised of repeating this test using the lens-system of the eye, but there is no reason to doubt, if this were done, that a similar result would be obtained. A further test is now performed with the test object a few feet from the observer; when he looks directly at it he sees it in its natural colours—one part in black and white, the other part in yellow and blue. The distance between the test object and the observer is now increased until a position is reached at which both parts of the test object appear black and white. When this is the case not only have the colours produced by chromatic aberration been eliminated but real colours as well.

If this experiment be now repeated, using blue test objects alone or yellow test objects alone, a similar result is observed; the blue is replaced by dark grey or black, while the yellow is replaced by white. Further details will be given elsewhere, together with the reasons for concluding that somewhere on the pathways between the retina and the brain there are situated nerve centres, one of which deals with blue while the other deals with yellow; and that these two in conjunction have the function of eliminating from vision the spurious colours produced by the chromatic aberration of the eye.

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THE PATHOGENICITY OF PENICILLIN-INSENSITIVE INFECTION

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In countries where animal, insect, and human life are closely associated it is not surprising that Gram-negative infection fails to follow the rules as laid down by workers in Europe. It is the object of this paper to show that, in the East at any rate, infection of wounds with penicillin-insensitive organisms is common and must be taken seriously; and it is hoped that further interest will be stimulated in this important subject. Our observations are confined to infection with the three Gram-negative organisms—*Bact. coli, Ps. pyocyanea*, and the *Proteus* group—on the one hand, and penicillin-insensitive strains of *Staph. aureus* on the other.

Two groups of workers, the one situated in the forward base areas in A.L.F.S.E.A. and the other at the rear base in India, both came to the same conclusion, quite independently, that infection with any of the penicillin-insensitive organisms mentioned above can result in a serious threat to life and limb. Papers continue to appear stating that the penicillin-insensitive Gram-negative organisms have no tendency to give rise to septicaemia or spreading infection, and that their action probably remains local; in fact, that in wounds they are essentially saprophytic.

The Gram-negative Bacilli

Before the advent of penicillin the organisms which were responsible for most of the devastation wrought by sepsis were the *Staph. aureus* and the *Str. pyogenes*. The Gram-negative bacilli and other microbes were considered to play a very subordinate part; even now they are held to be of very secondary importance by most European workers. Miles, writing in the *Lancet* of June 24, 1944, stated: "The two outstanding causes of severe wound infection are *Staph. aureus* and *Str. pyogenes*, the one being present in up to 100%, and the other in up to 70% of infected wounds." Elsewhere in that paper the same author refers to the rarity of "blue pus" in wounds. Hendry, Gledhill, and Price, writing in the *Lancet* (1945, **1**, 618), refer to *Ps. pyocyanea* and *Bact. coli* as non-pyogenic. Our experience in the East has been far less happy.

With the control of *Str. pyogenes* and sensitive strains of *Staph. aureus* by penicillin, *Bact. coli, Ps. pyocyanea*, and the *Proteus* group of organisms have been left free to demonstrate their pathogenic potentialities and to show that in certain circumstances they are capable of behaving in a manner which is anything but saprophytic. In the East *Bact. coli, Ps. pyocyanea*, and the *Proteus* group now represent the "Big Three" so far as wound infection is concerned, and workers recently arriving from Europe should be made fully aware both of their malignant nature and of their ubiquity. These three, together with penicillin-insensitive strains of *Staph. aureus*, are now the

cause of a major proportion both of fulminating and of prolonged low-grade infection in bone following war wounds. Lieut.-Col. Moffat, adviser in oto-rhino-laryngology for A.L.F.S.E.A., carried out investigations on antral, ear, and throat infections, and was impressed by the very high incidence of *Bact. coli* and *Ps. pyocyanea*. He expressed the opinion that, especially in the pre- and post-monsoon periods, the air and dust must be highly charged with these organisms. It is thus not surprising that their incidence in wounds is abnormally high. Of 86 wounds associated with late-infected compound fractures seen at the rear-base level, one or other of the three Gram-negative organisms was present in no fewer than 67.4% on admission. In a series of 65 late-infected compound fractures *Proteus* group was present in 53.8%, *Ps. pyocyanea* in 20%, and the *coli-aerogenes* group in 10.7%. In the forward areas *Bact. coli* was relatively more and *Proteus* group less common.

It was soon appreciated that when using penicillin tubes for the local instillation of penicillin into wounds every possible precaution was frequently ineffective in preventing the appearance of Gram-negative infection. Such infection occurred in 50% of our cases, and was often responsible for the breaking down of wounds. Break-down was liable to occur even in soft-tissue wounds when the secondary invader was a penicillinase-producing strain of *Bact. coli*. Pus associated with the presence of *Ps. pyocyanea* or *Proteus* group, on the other hand, could usually escape or be expressed from the depths of a soft-tissue wound, which then healed in a satisfactory manner. In the case of soft-tissue wounds infected with penicillin-insensitive organisms there was no instance of severe toxaemia following suture under local penicillin. In this respect our observations coincided with those of workers in Europe, but when closure of femoral fractures was undertaken it soon became apparent that Gram-negative infection was anything but innocuous.

Since in the compound femoral fracture it is notoriously difficult to perform a complete primary wound excision, it is not surprising that it is in this type of injury that both penicillin-sensitive and penicillin-insensitive organisms persist after the primary operation. It was amongst the compound femoral fractures that most of the complications associated with Gram-negative infection were encountered. When attempts were made to carry out delayed primary suture on or about the fifth day after wounding it was appreciated that infection, uncontrolled by both penicillin and the sulphonamides, was being locked up in the wound. Three cases in succession forcibly demonstrated that delayed primary suture of a compound femoral fracture was not a wise procedure under the conditions prevailing east of the Brahmaputra. The following is a brief account of the first of these, in none of which were Gram-positive organisms found, except where stated.

A patient with a grossly shattered lower third of the femur associated with a lesion of the sciatic nerve was sutured on the fifth day after wounding. Penicillin was administered both systemically and locally via tubes distributed in and around the site of fracture. A few days after suture there was a profuse discharge from the tubes. *Bact. coli* was isolated from the pus. Persistence of a swinging pyrexia and the appearance of toxaemia demonstrated that evacuation of the Gram-negative pus along the tubes was inadequate, and a large collection was accordingly drained posteriorly by a free incision extending to the proximal limits of the cavity. This operation led to a temporary improvement, but within a few days, in spite of a full course of sulphathiazole, it became evident that unless some radical procedure was adopted the patient would lose his life. Blood transfusion allowed amputation to be performed at the site of fracture, the flaps being left open. At operation it was noted that infection was well established in the bone distal to the site of fracture and also amongst the numerous fragments that were present. There was no undrained collection of pus. The patient was apyrexial within a week of amputation and toxaemia rapidly abated.

In the next two cases an effort was made to forestall the possible collection of Gram-negative pus by the provision of prophylactic posterior drainage. At the time of delayed primary suture a short wide-bore drainage-tube was inserted into the most dependent and proximal part of the haematoma via a posterior stab incision. Systemic penicillin therapy was combined with local instillations. For half an hour before each instillation the clamp was released from the sump drain to allow the escape of any pus which had collected. In one case the initial bacteriological examination had revealed *Str. viridans*, and in the other *Staph. aureus*. In both the wounds Gram-negative infection appeared within the first week, and there seems little doubt that it gained access through either the penicillin tubes or the sump drain. Both patients became extremely ill, and in both the infecting microbe was *Bact. coli*. Opening up of the original wounds to give free drainage, combined with the use of sulphathiazole, failed to prevent extension of infection along the thigh, and this was accompanied by high swinging pyrexia and marked constitutional disturbance. It became necessary to make further proximal incisions as localization of pus occurred. Only after many weeks did *Bact. coli* disappear; leaving the patients with all the effects of prolonged and profound toxaemia.

The experience gained from the preceding three cases led to the abandonment of delayed primary suture for compound fractures of the femur. The safer procedure of secondary suture with drainage after bacteriological examination was adopted instead. An initial wound swab was taken when the case arrived between three and five days after wounding, but no attempt at suture was made. Local procedures were limited to the removal of foreign bodies, correction of displacement, and, if necessary, more free exposure of the fracture site to ensure adequate drainage. The fracture was appropriately immobilized after the application of an occlusive dressing. Systemic penicillin was combined with the giving or completion of a 40-g. course of sulphathiazole. Although there were exceptions under this treatment, to be referred to later, it was the rule to find that the patient became apyrexial within ten days, and that both local and general conditions remained, or became, satisfactory. It was found that many of the wounds became free of pathogens and that secondary suture performed at this stage was followed by a smooth post-operative course. At the time of secondary suture the fractured bone ends were no longer visible in the depths of the wound, and closure of the latter was more on a par with closure of a soft-tissue injury. Even if the initial wound swab yields a penicillin-insensitive organism, free drainage combined with sulphathiazole should limit the spread of infection at this stage. Secondary suture with drainage performed on the tenth or twelfth day, when tissue planes are already sealed off and local adjustments have occurred, should give rise to no anxiety provided the bone is not involved.

The following six case summaries should provide strong evidence that infection with penicillin-insensitive Gram-negative organisms can produce illness of the utmost gravity in compound fractures of the femur, both recent and old. In addition to these many other cases of severe or prolonged illness have been seen after infection of compound fractures with Gram-negative bacilli.

Case 1

This patient was admitted on Feb. 4, 1945, four days after sustaining shell wounds which had caused soft-tissue injuries on the left thigh and a compound fracture of the right femur. In the soft-tissue wound, from which a profuse growth of *Bact. coli* and a scanty growth of *Staph. aureus* were obtained, two secondary haemorrhages subsequently occurred, necessitating femoral, and later external iliac, ligation. On Feb. 11 *Bact. coli* only was cultured from the wound. The limb survived, and in due course secondary suture was successfully performed. The wound associated with the fracture of the right femur was heavily infected, and secondary suture was never possible. Severe toxaemia persisted and progressed, and it became necessary to make even freer postero-lateral openings. On March 12 a large sequestrum involving three-quarters of the circumference of the femoral shaft was removed. Following this, high pyrexia of up to and above 103° F. (39.4° C.) persisted, while the discharge continued in undiminished quantities. Ten days after the operation a profuse secondary haemorrhage occurred from the right thigh. The femoral artery was ligated and the leg amputated through the site of the fracture, the flaps being left open. He died several hours later in spite of early and continued blood transfusion. During the period of observation he received two courses of parenteral penicillin, each of over 2 mega units, and sulphathiazole to the limits of tolerance.

From the wound associated with the fracture of the right femur *Str. pyogenes* and *Ps. pyocyanea* were isolated on admission. The streptococcus disappeared soon after penicillin therapy was instituted; *Ps. pyocyanea*, however, persisted, and was recovered from the wound on two further occasions before the operation of sequestrectomy, and again at the time of operation. At amputation the medullary cavity of the proximal fragment was filled with thick, greenish, tenacious pus, and similar greenish necrotic material had stripped the periosteum proximally. Heavy chemotherapy and wide exposure together failed to control the spread of Gram-negative infection. Since no other organisms were found it is probable that the microbe responsible for the progressive toxaemia, secondary haemorrhage, and death was *Ps. pyocyanea*.

Case II

Admitted on Nov. 7, 1944, a week after sustaining a compound fracture of the lower third of the femur together with a lesion of the sciatic nerve. A vaselined-gauze plug was removed from the wound and the fracture site widely exposed. Pus had been denied escape by the plug. Secondary suture was performed on Nov. 20, after which pyrexia developed and persisted, and the sutured wound broke down to allow the escape of salmon-pink pus. The fracture site was bathed in pus; pockets formed proximally, necessitating further incisions; and toxaemia progressed in spite of free drainage and sulphathiazole therapy. On Jan. 20, 1945, amputation had to be performed in order to save the patient's life.

On admission an organism of the *Proteus* group and *Staph. aureus* were isolated from cultures of the wound. No anaerobes were demonstrated. Within ten days of admission the staphylococcus had disappeared under the influence of penicillin treatment, and was never again present in any of the eleven bacteriological examinations which were subsequently performed, while *Proteus* or *Ps. pyocyanea*, or both, were present on every occasion. At the time of secondary suture *Proteus* group alone was cultured. Three days before amputation *Ps. pyocyanea* and a penicillin-sensitive non-haemolytic streptococcus were isolated, and at the time of amputation *Proteus* group was again the only organism demonstrated. The non-haemolytic streptococcus was an evanescent hospital contaminant of no consequence while the patient was under penicillin therapy.

Case III

Admitted on Feb. 10, 1945, five days after wounding, with a compound fracture of the lower third of the femur and a swinging temperature of up to 103° F. (39.4° C.). Systemic penicillin and sulphathiazole therapy were begun, and operation was performed on Feb. 12. More free exposure of the fracture site, and counter-drainage, were provided. The exposed muscles were covered with sloughs, and a foul-smelling discharge was present. He received a total of 1,920,000 units of penicillin and 40 g. of sulphathiazole. By the end of the sulphathiazole course the pyrexia appeared to be settling and the general condition to be improving, but on the sixth day after operation a severe popliteal haemorrhage occurred. Following control of the haemorrhage, it was only after plasma and 3 pints (1.7 l.) of blood had been given that the patient rallied sufficiently to permit of amputation with open flaps being performed. Further progress was uneventful.

A mixed growth of *Bact. coli* and *Ps. pyocyanea* was obtained from the foul-smelling discharge at the time of the initial operation. No anaerobic bacteria were detected. At amputation *Ps. pyocyanea* was isolated from the wound, and the same organism was present in the three subsequent bacteriological examinations that were made. At the first and third of these it was associated with *Bact. coli*, but at the second it was the only organism found.

Case IV

Admitted on March 14, 1945, 117 days after sustaining a comminuted compound fracture of the middle third of the femur associated with an incomplete lesion of the sciatic nerve. His general condition was very poor, there was high pyrexia up to 102° F. (38.9° C.), and the pulse rate varied between 90 and 100. The fracture was ununited, and was open in the depths of the wound. He had completed a course of parenteral penicillin (840,000 units) six days before admission. Parenteral penicillin therapy was started the day after admission, 2.24 mega units being given. Next day one of the wounds was enlarged, the medullary cavities of the proximal and distal fragments were opened, and free drainage was established. The general condition became critical on the table in spite of plasma transfusion. Ten days after completing the first course of penicillin a second course was started because infection was uncontrolled and the general condition was deteriorating: 1.28 mega units were administered. Four days later a meteoric descent in the general condition occurred, and on the morning of April 12 he was in such a state of circulatory collapse that the blood pressure was unrecordable and the radial pulse impalpable. An emergency circular amputation 1 in. (2.5 cm.) above the site of fracture was performed in bed. After causing the gravest anxiety he recovered from this operation, but three secondary haemorrhages subsequently occurred, the first of which was almost fatal.

Proteus, together with a penicillin-sensitive strain of *Staph. albus*, was present in two bacteriological examinations performed in the four days preceding our first course of penicillin. The staphylococcus never reappeared. At the time of the first operation *Proteus*, *Ps. pyocyanea*, and diphtheroids were isolated from samples of pus and excised bone. During the period between this operation and amputation ten bacteriological examinations were carried out. *Proteus* was present on every occasion—in eight alone and in two associated with diphtheroids. *Proteus* was isolated from pus and bone taken at the time of amputation, and was found in pus taken from the stump on two subsequent occasions—once with *Ps. pyocyanea* and the second time alone. Anaerobic cultures performed on the samples taken at the time of amputation were negative.

Case V

Admitted on Aug. 14, 1944, 133 days after receiving compound comminuted fractures of the upper thirds of both femora. There were high pyrexia up to 103° F. (39.4° C.), a rapid pulse rate, and a moderate degree of macrocytic anaemia. Both fractures were ununited, and were exposed in the depths of the wounds. The general condition was not improved by a parenteral course of 840,000 units of penicillin, and a second course associated with bilateral sequestrectomy was equally ineffective. *Ps. pyocyanea*, *Proteus*, and *Bact. coli* were isolated from the wounds on both sides on Oct. 14, when a third course of parenteral penicillin was started. A radical excision of diseased bone was performed on both sides and the wounds were sutured over penicillin tubes. 3,657,000 units of penicillin were given parenterally and 324,000 units locally. Both wounds broke down and the general condition underwent progressive deterioration. *Ps. pyocyanea*, *Proteus*, and *Bact. coli* were isolated from the wounds on Oct. 18, and *Proteus* group and *Bact. coli* on Oct. 21. A penicillin-sensitive coagulase-positive staphylococcus appeared on Oct. 24 as a hospital infection, but persisted for less than four days as the patient was on penicillin at the time.

A fourth course of parenteral penicillin—1,800,000 units—was begun on Dec. 11, and sequestrectomy with total suture of the wounds was performed on the left side. *Proteus* was isolated from the wound. The wound broke down completely and the general condition deteriorated still further, necessitating a circular amputation through the site of fracture on Dec. 30. After amputation the patient's general health improved markedly and a successful secondary suture of the stump was performed on Jan. 4, 1945, when *Proteus* group was again cultured. The operation was performed under the protection of a fifth course of penicillin, 2,880,000 units being given.

The wound on the right side continued to discharge, the fracture remained open, and union failed to occur. *Proteus* and diphtheroids were isolated on Jan. 26, and *Proteus* alone on Feb. 23 and March 5. On April 5 sequestrectomy was performed. *Proteus* was isolated from both pus and sequestrum taken for examination at the time of operation. Subsequently the fracture remained ununited and a sinus down to bone persisted until the patient was evacuated on June 5.

Case VI

Admitted on Jan. 5, 1945, 45 days after receiving a comminuted compound supracondylar fracture of the right femur involving the knee-joint. The general condition was moderate, and there were a high swinging pyrexia up to 103° F. (39.4° C.), a rapid pulse rate, and a moderate degree of macrocytic anaemia. The fracture was ununited, and was exposed in the depths of the wound. On Jan. 9 a course of parenteral penicillin was begun, 3.84 mega units being administered. Radical excision of diseased bone was performed via A. K. Henry's incision on Jan. 18. This incision and the anterior wound were sutured, while the posterior wound was left open for drainage. While he was still on penicillin treatment suppurative arthritis of the knee developed and the general condition deteriorated alarmingly, necessitating a circular amputation through the site of fracture on Jan. 27. The flaps were left open. A dramatic improvement in the general condition followed this operation, and a secondary suture was successfully performed seventeen days later under the protection of a second course of parenteral penicillin (1.7 mega units).

Before starting penicillin therapy, *Proteus*, diphtheroids, and a non-haemolytic streptococcus were isolated from the wounds, while *Proteus* and diphtheroids were cultured from bone removed at the first operation. *Ps. pyocyanea* was isolated two days before amputation and again at amputation.

In all the above cases Gram-negative organisms were isolated on many occasions, and pyogenic cocci, when present, occurred as evanescent hospital infections and were rapidly controlled in every case by penicillin therapy. In two of the three late cases Gram-negative organisms were isolated from bone removed at operation as well as from the wound discharges. That pyogenic cocci were probably not present in bone in the remaining four cases is strongly suggested by the fact that one of us, in the examination of portions of bone removed at operation in 34 cases of late-infected compound fractures, found that all organisms isolated from the bone had already been identified in the wound discharges of 32. In the remaining two *Staph. aureus* was isolated from the bone though it had not been found up to that time in the wound discharge. In both cases it did, however, subsequently appear in the pus. Anaerobic examinations were performed in two of the recent cases and in one of the late cases. In all three the examination was negative. A series of 70 late-infected compound fractures studied by us at the rear-

base level indicated that non-haemolytic streptococci and diphtheroids did not affect wound-healing under penicillin treatment. The former were present in two of the above cases and the latter in three, each on isolated occasions. In the same series of 70 cases wound suture over a late-infected fracture with the aid of penicillin was successful in 14 out of 15 cases (93%) from which *Proteus, Ps. pyocyanea,* and *Bact. coli* were absent at the time of operation (*Staph. aureus* or *Str. haemolyticus* was present in 12 of these). On the other hand, suture was successful in only 28 out of 62 cases (45.2%) in which the above Gram-negative organisms were present. The only failure in the first group was almost certainly due to secondary infection with *Proteus,* which was found in the broken-down wound at the first dressing on the sixth post-operative day. The evidence for incriminating the Gram-negative organisms is therefore extremely strong in spite of the fact that virulence tests were not performed. Moreover, all of the six cases received adequate penicillin therapy, and in not a single instance did any benefit ensue. The three early cases in addition received sulphathiazole treatment, again without benefit. We may thus assume that infection with Gram-negative organisms resulted in illness severe enough to necessitate amputation in all of these six cases and to cause death in one of them.

It is more generally recognized that Gram-negative bacteria can display marked pathogenic properties on becoming established in the peritoneum, the urogenital tract, the meninges, the pleura, and the synovial membranes. The haemothorax infected with *Bact. coli* produces constitutional symptoms only slightly less severe than those produced by the Gram-positive infections. When drainage of an empyema has been established, it is the Gram-negative organisms that frequently are responsible for the persistence of chronic sepsis. *Ps. pyocyanea* and *Proteus* were found to be the infecting organisms in just as many pyopneumothoraces as was *Staph. aureus.* After seeing a number of haemothoraces in which Gram-negative infection had developed following prophylactic instillation of penicillin, it was felt that such instillation did more harm than good. The majority of uncomplicated haemothoraces progress satisfactorily with sufficiently frequent aspiration, and therefore it is unjustifiable to run the risk of introducing penicillin-insensitive organisms along with penicillin solution which may have been prepared under other than ideal conditions. Similarly, the prevalence of these organisms makes the prophylactic use of penicillin in the uninfected joint an unduly hazardous procedure, especially since aspiration alone gives satisfactory results in the uninfected haemarthrosis. The surgeon in the East must be fully alive to the possibility that *Bact. coli, Ps. pyocyanea,* or *Proteus* is frequently the responsible organism in a suppurative arthritis. If aspiration and penicillin therapy are used in such cases instead of free opening and drainage, disaster will indubitably follow.

Penicillin-insensitive Staph. aureus

Added to the hazards of Gram-negative infection is that due to strains of *Staph. aureus* which are, or have become, resistant to intramuscular injections of penicillin in doses of 20,000 units every three hours.

At the rear-base level it was found that the incidence of resistant strains of *Staph. aureus* was increased for some months after penicillin therapy was instituted in the forward areas in Burma. The overall incidence of strains insensitive to 0.04 unit of penicillin per ml. at the time of admission to the rear base was 17%, the sensitivity being determined by doubling dilution. In a group of 43 cases with late-infected compound fractures admitted to the rear base before penicillin therapy had been instituted no resistant pyogenic staphylococci were isolated, whereas in a similar group to whom penicillin had been administered in the forward areas 9.4% of *Staph. pyogenes* isolated on admission were resistant to 0.04 unit per ml. A point of interest was that of the *Staph. pyogenes* occurring in wounds as hospital infections 30% were resistant to 0.04 unit of penicillin per ml.

Major Ives, R.A.M.C., working in S.E.A.C., noted that among the pyogenic staphylococci isolated by him from wounds between January and June, 1945, the ratio of resistant strains was greater where the cocci were associated with a Gram-negative organism. The accompanying table, compiled by Major Ives, illustrates this point.

One effect of parenteral penicillin therapy in the forward areas is to reduce the rate of pyogenic coccal infection of unhealed wounds on admission to the rear-base hospitals. The degree of reduction is proportional to the adequacy of treatment. Conversely, the incidence of "Gram-negative" wounds

Micro-organism	Total Examined for Sensitivity	Number Resistant	Percentage
Staph. aureus	134	53	39·6
Staph. aureus in association with *Bact. coli*	38	20	52·6
Staph. aureus in association with *Ps. pyocyanea*	16	8	50·0
Str. viridans	23	5	21·7
Str. pyogenes	50	0	Nil

is proportionately increased. In those wounds in which pyogenic cocci persist in spite of penicillin treatment the incidence of resistant strains is increased. It is thus debatable whether the association of resistant strains of *Staph. aureus* with Gram-negative organisms is due to the presence of the latter or to the previous inadequate penicillin treatment.

Penicillin-insensitive strains of *Staph. aureus* were found at the forward-base level in wounds affecting any part of the body, but it was in the compound femoral fracture that they proved most troublesome. With improved forward surgery, early in 1945, a further attempt was made to carry out delayed primary suture with drainage under cover of a penicillin "umbrella," the drug being given systemically. Many of the wounds appeared clean, and suture was performed on or about the fourth day after wounding. Some cases gave most gratifying results, but many others developed complications ranging from wound break-down to spreading sepsis and secondary haemorrhage, and in many cases this was due to the presence of a penicillin-resistant *Staph. aureus.* It was soon realized that it was unwise to carry out closure of a compound femoral fracture without first excluding the presence of a penicillin-insensitive staphylococcus. In the East delayed primary suture without bacteriological control is a dangerous procedure in the case of compound fractures of the femur; it is much safer to perform secondary suture on the tenth or twelfth day after a knowledge of the infecting microbes has been acquired.

Sensitivity and resistance to penicillin are purely relative terms. Different strains of staphylococci exhibit diverse shades of penicillin sensitivity. Pressure of work prevented routine testing of the degree of resistance at the forward base, but this was carried out at the rear base, where the method of serial doubling dilutions was employed. The range varied from twice as sensitive as the test organism (N.C.T.C. No. 6571A) to between 6,000 and 12,000 times more resistant than the latter, and between these extremes there is every gradation. Moreover, remarkable variations of sensitivity may occur in a very short space of time under the influence of inadequate penicillin therapy. In one case the resistance of an infecting staphylococcus was between 16 and 32 times as great as that of the Oxford staphylococcus; 6 days later it had increased to between 780 and 1,560 times as great as the test organism. During this period the patient was receiving 20,000 units of penicillin every three hours. Several other similar examples were met with, and they indicate the importance both of giving an adequate dosage of penicillin and of performing serial sensitivity tests in this type of case.

It has been our clinical experience that where surgery is adequate a dosage of 20,000 units of penicillin every three hours, given by the intramuscular route, will control a staphylococcus whose sensitivity is equal to that of the Oxford staphylococcus, but that it will not control a more resistant organism. The more insensitive strains can be controlled provided that the dosage is stepped up sufficiently.

One patient with a united compound fracture of the upper end of the humerus and a sinus leading down to bone was infected with a *Staph. aureus* twice as resistant as the Oxford staphylococcus. Penicillin therapy was started. In view of the resistance of the staphylococcus 30,000 units were given every three hours instead of the usual dosage of 20,000 units. 48 hours later the sinus was excised, radical removal of bone performed, and the wound totally sutured under no tension and without drainage. After operation pyrexia persisted and a superficial sinus appeared in the wound from

which a *Staph. aureus* was recovered. The wounds showed signs of inflammation. The dosage was increased to 40,000 units every three hours. The temperature immediately fell to normal, the signs of inflammation rapidly disappeared, and within four days the sinus had closed.

A second case of great interest in this respect was that of a patient who had an infected compound fracture of the neck of the femur. His general condition was very poor, and was deteriorating rapidly in spite of the fact that he had been on penicillin treatment for 28 days. He was receiving 20,000 units every three hours. At this stage one of us was asked to see the case. There was a high swinging pyrexia of up to 102° F. (38.9° C.), the pulse rate was rapid, and the general condition was the cause of grave concern. Infection was due to a *Staph. aureus* 16 times more resistant than the Oxford staphylococcus. The dosage was increased to 200,000 units every two hours—i.e., almost sixteenfold—and maintained at this level for 19 days. There was an immediate response on the temperature and pulse charts, and a striking improvement in the general condition. Within four days he was fit enough to have the head of the femur removed in safety. The bone was grossly diseased and there was a suppurative arthritis of the hip. His subsequent progress was satisfactory. Massive penicillin therapy probably saved this patient's life. He received the enormous total dose of 23.2 mega units.

It is clear that the dosage of penicillin necessary to control infection due to *Staph. aureus* is dependent upon the sensitivity of the organism, and whenever it can be done the sensitivity should be tested before starting treatment. It should be possible to compile tables equating dosage to sensitivity. In treating infections due to resistant strains of *Staph. aureus* continuous administration of penicillin would achieve a more exact equation between resistance and dosage, and great economy in expenditure of the drug. This would be the ideal technique of treatment were a satisfactory method of continuous administration available. Staphylococci up to, say, 16 times more resistant than the Oxford staphylococcus are within reach of effective penicillin therapy provided the dosage is stepped up to meet the occasion.

Inferences

The Gram-negative bacilli are a common cause of prolonged low-grade infection in bone following compound fractures in the East, and are capable of producing severe spreading infection serious enough to lead to death or amputation.

Penicillin-insensitive strains of *Staph. aureus* are frequent. The less resistant strains can be controlled effectively by stepping up the dose of penicillin to a suitable degree.

Further work devoted to the control of penicillin-insensitive organisms is urgently required.

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MUNICIPAL HOSPITAL MEALS

As a result of a special inquiry the Manchester Public Health Committee has made a number of recommendations on hospital meals. One of them is that a catering supervisor be appointed to each of the city's municipal hospitals. It is also suggested that, when conditions permit, all patients should have their meals served on individual trays, and also that a full rotation of diet should be resumed, with a choice of two dishes. "It is not enough," says the report, "that patients on leaving hospital should be in such a condition that the clinical symptoms of illness have been cleared up, or that a surgical operation has been successfully performed and the site healed sufficiently to permit of removal to home. The diet and treatment should be such that the strength of the patients is built up sufficiently to restore the wastage caused by illness and to send them away from the hospital as fit as possible." Commenting on the Public Health Committee's recommendations, the *Manchester Guardian* says in an editorial, "It will always be easy to find excuses for continued neglect of the patient's nutritional needs unless some permanent body or official is specifically charged with the duty of seeing that this document's admirable recommendations are put into effect." According to the *Hospitals Year-book*, dietitians are at present employed at only two of Manchester's voluntary hospitals, and none at all are to be found at the municipal hospitals. London has dietitians at only fifteen of its hospitals.

MALNUTRITION IN RECOVERED PRISONERS OF WAR AND INTERNEES

REPORT OF 10 CASES EVACUATED FROM THAILAND

BY

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This work on malnutrition in R.A.P.W.I., British other ranks, was undertaken at the request of Lieut.-Col. G. A. Ransome, I.M.S., Local Adviser in Medicine to XII Army, who, during his tour of P.O.W. camps in Thailand after the Japanese capitulation, considered it advisable to send an experienced team of medical officers and nursing sisters to deal with the serious cases in Prachuab Kirikan. The military situation at the time, however, did not permit the entry of nursing sisters into the area, and only two medical officers were sent.

With the conditions in the camp and the lack of facilities for treatment and nursing, it was decided to risk immediate evacuation by air, to give these men a better chance of survival. This was accomplished successfully, and no undue distress was noticed in the patients. The maximum height attained by the aeroplane never exceeded 10,000 feet (3,050 m.). It will be seen from the report that all these patients were anaemic, the lowest with a haemoglobin of 5 g.%. Only ten of these cases are described below.

These patients were taken prisoner at Singapore in February, 1942. The majority of them kept in good health for that year, but repeated attacks of malaria and hard physical labour while on a poor rice diet caused an increasing sick rate. Deficiency diseases appeared by the middle of 1943, with the general health progressively deteriorating; but with periodic augmentation of the diet by additions of meat and eggs and Red Cross supplies (received twice only) some improvement followed, though relapses occurred soon after. Bowel disorders, once started, made conditions worse, and supervening chronic diarrhoea produced a picture of severe malnutrition.

After the capitulation these patients received a complete course of antimalarial treatment and intensive vitamin therapy (oral and parenteral) for about one week before being evacuated into this hospital at Rangoon. The clinical descriptions as given in this report are of cases seen from the time of admission into this hospital. Some of these patients had already started improving. While in this hospital every patient received 12 tablets of multivitamin daily and suppressive mepacrine in addition to the specific treatment enumerated with each case.

All pathological data are recorded in tabular form with a synopsis of the patients' clinical state and past history for easy reference. The diet while in P.O.W. camps was variable, but chiefly consisted of rice. The average daily diet, light diet, and high-protein diet which they received in this hospital are given at the end of the paper.

Case 1

Cpl. A., aged 34. *Past History.*—Maintained fairly good health in 1942. In 1943–4 suffered from repeated attacks of malaria and one attack of clinical dysentery, with progressive deterioration of health and marked weakness but without much loss of weight. In April, 1945, he had scrub typhus, after which he developed swelling of both feet and legs and a marked degree of anaemia. He had 1,000 ml. of blood transfused before coming to this hospital.

Clinical Features.—Still severely anaemic; Hb, 5 g.%; red cells, 1,650,000 per c.mm.; marked oedema of the lower extremities and slight ascites. Tongue pale and flabby, but no redness. No visual complaints, but suffered from slight deafness. Heart slightly dilated; apex in the nipple line, with a diffuse cardiac impulse; no clinical enlargement of the right side. Haemic murmur present. B.P. 118/76. Lungs clear. Abdomen slightly distended; liver and spleen not palpable; tenderness over the lower abdomen, with a thickened caecum. Reflexes all present and equal. No sensory change. Skin: generalized pediculus infection; texture normal.

Treatment.—Injection of thiamine chloride 50 mg. for 1 day, followed by 20 mg. daily for 5 days. Reconstituted double-strength human plasma, 250 ml. This was repeated one day later, and 500 ml. of citrated whole blood was transfused next day. Light diet was given for three days, which was well tolerated; this was followed by minced high-protein diet and iron by mouth.

Progress.—The oedema disappeared after plasma transfusion, and in two weeks the patient showed marked clinical improvement; anaemia improved and blood protein reached almost normal level.

Case II

Pte. B., aged 26. *Past History.*—No illness in 1942; had repeated attacks of fever in 1943, once diagnosed as M.T. malaria. In 1944 had several attacks of fever and beriberi, with oedema of legs, which improved with rest and the diet supplemented by milk and eggs. In 1945, six weeks before capitulation, started diarrhoea, which had been persistent. Later developed oedema of lower extremities and genitals, with ascites.

Clinical Features.—Patient grossly emaciated; pinched facies and prominent ribs; hands and legs swollen. Tongue magenta red and depapillated. Heart normal. Lungs clear. Abdomen: Scaphoid and tense; marked loss of areolar tissue; free fluid present; liver and spleen not palpable; tenderness over the entire colon; caecum thickened, also tender. Bowels: Loose watery stools, over 20 a day. Reflexes could not be elicited because of extreme wasting of the muscles. Skin dry and scaly.

Treatment.—Injection of thiamine chloride 50 mg. for 3 days, 20 mg. for 10 days, and 10 mg. for 6 days. Nicotinic acid 300 mg. daily for 10 days, followed by 6 injections of nikethamide 1 ampoule daily. Routine course of sulphaguanidine for 7 days, followed by sulphathiazole 4 days, checked the diarrhoea; but later *E. histolytica* cysts were found in the stools and specific treatment was started. Reconstituted double-strength human plasma 1,500 ml. was given in six injections of 250 ml. daily. Diet: In the early stages this consisted of drinks of whey, vegamite soup, and curds; pulped liver was then added, and the diet gradually increased to a minced high-protein diet including 8 oz. of fresh liver daily. The patient tolerated this diet after two weeks' stay in hospital.

Progress.—The oedema subsided slowly and steadily. Appetite was regained, and with the diarrhoea controlled he has made steady progress. (Still in hospital.)

Case III

Gnr. C., aged 37. *Past History.*—Had repeated attacks of malaria 1942–4; dysentery and beriberi in 1945, one month before capitulation.

Clinical Features.—Extremely emaciated, with sunken features, prominent ribs, and "matchstick" legs. Slightly dehydrated. Anaemia marked; Hb, 7 g. %. Complained of slight deafness and dimness of vision. Had been using glasses: vision 6/9; with glasses 6/6 previously, but now 6/9 not improved with glasses. Disks healthy. Tongue: Atrophic glossitis with multiple shallow furrows and marginal redness. Heart: Diffuse apical impulse; boundaries and sounds normal. Complained of slight cough, but lungs clear; *x*-ray report, "lung fields normal." Abdomen: No distension; liver just palpable; spleen not felt; no tenderness of colon. Bowels loose, watery; 6 to 7 stools per day. Reflexes normal. Oedema of lower limbs present. Skin rather dry, with pediculus infection and scabies.

Treatment.—Injection of thiamine chloride 50 mg. for 3 days and 10 mg. for 10 days. Six injections of nikethamide 1 ampoule daily. Routine course of sulphaguanidine, and 500 ml. of reconstituted double-strength plasma. Diet: Light diet till diarrhoea subsided, then minced high-protein diet. Iron was given when diarrhoea had stopped, and injections of liver when the anaemia proved to be megalocytic in type.

Progress.—Improved gradually; oedema diminished quickly after plasma transfusion and disappeared after another week.

Case IV

Pte. D., aged 28. *Past History.*—Dysentery, repeated attacks of malaria, and beriberi in 1942. Beriberi every year since; also several attacks of malaria. Admitted to hospital in April, 1945, when oedema of extremities and genitals, with ascites, supervened.

Clinical Features.—Moderately well nourished, with marked pallor; red cells, 2,600,000 per c.mm.; rather dyspnoeic; neck veins empty at 60. Tongue magenta red, with loss of superficial epithelium. Heart dilated; apex 1/4 in. (0.6 cm.) outside the nipple line; no obvious enlargement of the right side; systolic murmur present over mitral and pulmonary areas. Lungs: Signs of basal congestion present. B.P. 110/80. Abdomen: Slightly distended; liver enlarged 2 cm. and spleen 4 cm. below the costal margin; caecum and sigmoid colon not palpable. No diarrhoea on admission. Reflexes present but sluggish. Skin normal. Patient had a fever with rigor, and a blood specimen showed B.T. trophozoites.

Treatment.—Complete antimalarial course. Injection of thiamine chloride 50 mg. for 3 days and 20 mg. for 14 days; nikethamide, 6 injections of one ampoule daily. While on a high-protein diet relapsed into a diarrhoea, which settled with nikethamide injections and light diet. Later tolerated high-protein diet.

Progress.—Improvement slow but steady. No dyspnoea, cough subsided and tongue became more normal. Heart remained slightly dilated; oedema of legs disappeared gradually in a week.

Case V

Gnr. E., aged 37. *Past History.*—Had synovitis in the right knee in 1942, which has been recurrent. In 1943 had malaria thrice and dysentery four times; in 1944 malaria nine times; and in 1945 scrub typhus and several attacks of malaria.

Clinical Features.—Extremely emaciated, with moderate anaemia. Red cells, 3,500,000 per c.mm. Tongue sore, with marginal redness. Heart and lungs normal. Abdomen: Slightly distended; liver and spleen not palpable; caecum and sigmoid colon tender—no thickening. Bowels: Loose watery stool 8 to 10 times a day. Reflexes all present but sluggish. No sensory change. Skin rough and dry, with scabies. No oedema. Right knee-joint swollen and tender, with marked spasm of the quadriceps. Two oz. (57 ml.) of thick viscid yellow fluid was withdrawn on aspiration. Examination of the fluid showed no organisms, no acid-fast bacilli, few cells (polymorphs and lymphocytes, the latter predominating). Culture sterile. *X*-rays: Right knee—an area of rarefaction seen below the intercondylar eminence just medial to the midline; chest—apart from generalized increase in the lung markings no abnormality seen.

Treatment.—Injection of thiamine chloride 10 mg. daily for 6 days; nikethamide, 6 injections of 1 ampoule daily. Diet: light diet till diarrhoea controlled, then minced high-protein diet and iron.

Progress.—Slow improvement; diarrhoea stopped, tongue became normal. Very little gain in weight. The knee showed little change.

Case VI

Sgt. F., aged 25. *Past History.*—No illness in 1942. Several attacks of malaria and occasional diarrhoea in 1943–4. No dysentery. Beriberi in July, 1945.

Clinical Features.—Extremely emaciated and slightly dehydrated. Anaemia marked; Hb, 6.5 g. %, with an icteric tinge of the skin and sclera. Tongue: Mild atrophic glossitis; no soreness. Heart: Mild tachycardia; size normal; haemic murmur present. Lungs: Occasional moist sounds. *X*-ray chest: "Lung fields clear." Abdomen: Scaphoid, with marked loss of fat; liver and spleen not palpable; caecum and sigmoid normal. Reflexes brisk. No sensory change. Skin lax, rough, and dry, with scabies and a few septic spots.

Treatment.—Minced high-protein diet. Citrated whole-blood transfusion 500 ml. and iron from the fourth day of admission.

Progress.—Diet tolerated well. Rapid improvement followed blood transfusion.

Case VII

Sgt. G., aged 25. *Past History.*—Several attacks of malaria in 1942. In May, 1943, first attack of dry beriberi, and repeated attacks of malaria. In 1944 an attack of dysentery and also malaria. In April, 1945, had dysentery again, followed by chronic diarrhoea and pain in the legs (pellagra).

Clinical Features.—Markedly emaciated and anaemic; Hb, 8.6 g. %. Dimness of vision correctable with glasses (had used glasses before). Tongue normal. Heart normal. Lungs clear. Abdomen: Slightly distended; liver edge just palpable, not tender; spleen not palpable; caecum and colon normal. Reflexes: Knee-jerks could not be elicited owing to extreme atrophy of muscles; ankle-jerks present but sluggish. No sensory change. No oedema. Skin normal.

Treatment.—Tolerated light diet very well, and after four days was on high-protein diet and iron.

Progress.—Steady improvement; uneventful.

Case VIII

Pte. H., aged 29. *Past History.*—Had dysentery and dengue in 1942, beriberi in 1943, with several attacks of malaria and an attack of typhus fever. In 1944 had several attacks of malaria. In 1945 had malaria thrice and was unconscious every time. In June developed oedema of lower extremities and ascites.

Clinical Features.—Fairly well nourished; slightly anaemic. Hb, 11 g. %; red cells, 2,700,000 per c.mm.; colour index, 1.45; M.C.V., 118 c.μ. Tongue normal. Heart normal. Lungs clear. Abdomen: Distended; free fluid present; liver not palpable; spleen enlarged 2 cm. below costal margin. No diarrhoea. Swelling of feet and legs. Reflexes normal. Skin: Texture normal.

Treatment.—Minced high-protein diet tolerated well from the beginning. I.V. quinine 6 gr. (0.4 g.) daily for 6 days. I.M. injections of liver extract 32 ml. first week, 16 ml. second week. Iron was given from the fourth day.

Progress.—Although on suppressive mepacrine after a complete course of antimalarial treatment, the patient was running a slight

Laboratory Findings

Case No.:	I		II		III		IV		V		VI		VII		VIII		IX		X	
	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)
R.B.C. in mills. ..	1·65	3·46	3·40	3·24	—	2·74	2·60	3·54	3·50	3·68	—	3·23	2·75	3·82	2·70	3·91	3·6	4·15	3·7	3·5
Hb in g. %:																				
Sahli	5·0	9·9	9·4	10·2	7·7	10·4	8·8	10·6	8·4	9·8	6·5	9·6	8·6	10·8	11	11	10	13·2	8·3	10
Copper sulphate ..	5·6	9·4	10	10·2	7·4	10·2	8·4	10·4	9·2	10·1	6·2	9·8	8·5	10·6	11	11·3	10·4	11·9	8·2	9·9
Colour index	1·09	1·04	0·97	1·12	—	1·36	1·2	1·06	0·83	0·95	—	0·9	1·1	0·99	1·45	1·01	1·0	1·14	0·8	1·03
Haematocrit	16	28	29	30	22	31	25	31	27	30	18	29	24·5	31	32	33	31	35	24	29
M.C.V. (c.μ) ..	97	81	85	92·5	—	113	96	87·5	77	81·5	—	85·5	89	80·7	118	84·5	86	84·5	64·7	83
M.C.H.C. (%) ..	31·2	32·4	32·4	33·3	35	33·5	35·2	34·2	31·2	32·8	36·1	33·2	35	34·8	34·2	33·3	32·2	37·7	34·6	34·6
Proteins in g. %:																				
Serum	5·5	6·3	3·95	5·0	4·65	5·7	5·4	6·5	6·3	6·1	6·3	7·0	4·65	5·7	5·4	6·1	5·7	7·0	5·4	5·4
Plasma	5·9	7·5	4·3	5·6	5·2	6·8	6·1	6·8	6·49	7·5	6·7	7·2	5·01	6·3	5·4	6·8	6·5	8·1	6·1	6·6
Urine routine examination	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Stool:																				
Examination ..	—	—	E.H. cysts		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Culture	—	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Clinical Features

Emaciation	Slight	Nil	Marked	Moderate	Marked	Slight	Slight	Nil	Marked	Moderate	Marked	Slight	Marked	Moderate	Nil	Nil	Moderate	Nil	Slight	Nil
Dehydration	Nil	,,	Slight	Nil	Slight	Nil	Nil	,,	Slight	Nil	Slight	Nil	Nil	Nil	,,	,,	Nil	,,	Nil	,,
Anaemia	Severe	Slight	,,	Slight	Marked	Moderate	Moderate	Slight	Moderate	Slight	Severe	Moderate	Severe	Slight	Slight	Slight	Moderate	Slight	Severe	Moderate
Tongue	Pale, flabby	Flabby	Magenta red; atrophic	Atrophic	Red margin; atrophy	Atrophic	Red, glazed	Normal	Red margin; sore	Normal	Atrophic glossitis	Normal	Normal	Normal	Normal	Normal	Red, sore	Normal	Marginal redness	Normal
Heart dilatation ..	Slight	Nil	Nil	Nil	Nil	Nil	Slight	Slight	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Lungs	Clear	Clear	Clear	Clear	Clear	Clear	Basal creps.	Clear	Clear	Clear	Few creps.	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Tuberculous infiltration	
Distension	Present	Nil	Present	Nil	Nil	Nil	Present	Nil	Nil	Nil	Nil	Nil	Slight	Nil	Slight	Nil	Nil	Nil	Nil	Nil
Liver	N.p.	N.p.	N.p.	N.p.	Just p.	Just p.	2 cm.	1 cm.	N.p.	N.p.	N.p.	N.p.	Just p.	Just p.	N.p.	N.p.	N.p.	N.p.	N.p.	N.p.
Spleen	,,	,,	,,	,,	N.p.	N.p.	4 cm.	3 cm.	,,	,,	,,	,,	N.p.	N.p.	2 cm.	1 cm.	,,	,,	,,	,,
Caecum	Tender	N.a.d.	Tender, thick	N.a.d.	N.a.d.	N.a.d.	N.a.d.	N.a.d.	Tender	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Colon	,,	,,	Tender	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,
Diarrhoea	Nil	Nil	Marked	Slight	Slight	Nil	Nil	Nil	Slight	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Ascites	Present	,,	,,	,,	Nil	,,	,,	,,	Nil	,,	,,	,,	,,	,,	Slight	,,	,,	,,	,,	,,
Oedema of legs ..	Marked	,,	,,	Nil	Marked	,,	Slight	,,	,,	,,	,,	,,	,,	,,	Marked	,,	,,	,,	,,	,,
Reflexes	Normal	Normal	Normal	Normal	Normal	Normal	Sluggish	Sluggish	Sluggish	Sluggish	Brisk	Brisk	Sluggish	Sluggish	Normal	Normal	Normal	Normal	Normal	Normal
Skin changes	Nil	Nil	Yes	Nil	Yes	Nil	Nil	Nil	Yes	Nil	Yes	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil

Past History

Malaria	Over 40 times	30–40 times	20–25 times	Over 40 times	20–30 times	25–30 times	35–40 times	Several	40 times	3
Dysentery	1	Nil	1	1	Nil	Nil	2	1	1	Nil
Diarrhoea	Nil	Several	Nil	Nil	4	Occasional	Chronic, 1945	Nil	Nil	,,
Beriberi	,,	1	1	4	Nil	1	1	,,	2	,,
Pellagra	1	Nil	Nil	Nil	,,	Nil	1	,,	Nil	,,
Typhus fever	1	,,	,,	,,	1	,,	Nil	1	,,	,,

(a) = Observations on admission; (b) = Observations two weeks later, before evacuation. Stool: — = no ova or cysts; no pathogenic organisms.

fever on alternate days. Blood films showed no parasites, but the temperature responded to quinine therapy. The megalocytic anaemia improved with liver. Very good response to treatment.

Case IX

Fus. I., aged 30. *Past History.*—No illness in 1942. In 1943 had ulcers on both legs and beriberi. In 1944 had malaria 16 times; in 1945 malaria 20 times and dysentery once followed by beriberi.

Clinical Features.—Moderately emaciated; slightly anaemic. Hb, 10 g. %. Tongue red, depapillated, and sore. Heart and lungs normal. Abdomen: No distension; liver and spleen not palpable; tenderness over the lower abdomen. Bowels normal. Reflexes normal. No oedema. Skin normal.

Treatment.—Minced high-protein diet and iron from the fourth day.

Progress.—Satisfactory improvement.

Case X

Sgt. J., aged 45. *Past History.*—No illness in 1942–3. Had malaria twice in 1944, and an attack of cerebral malaria in 1945, when he developed a bed-sore.

Clinical Features.—Moderately well nourished; wasting of the left pectoral muscles. Moderate anaemia. Hb, 8.3 g. %; red cells, 3,700,000 per c.mm. C.I., 0.8; M.C.V., 64.7 c.μ. Tongue: Marginal redness, and depapillated. Heart normal; slight tachycardia. Lungs: Scattered crepitations; had haemoptysis once while in this hospital. Sputum: Acid-fast bacilli present. *X*-ray chest: "Tuberculous infiltration left apex." Abdomen: No distension; liver not palpable; spleen just felt. No diarrhoea, no oedema. Reflexes normal. Large bed-sore, granulating. Skin normal.

Treatment.—Absolute rest; high-protein diet with extra fat (total calories, 4,500); linct. codein. at night; morphine 1/4 gr. (16 mg.) subsequent to haemoptysis; iron mixture.

Progress.—With rest the temperature came down to normal, which was subsequently maintained. Appetite was good, and he appeared to have gained weight. Anaemia improved.

Light Diet as Given in Hospital

(Approximately—170 g. Protein; 3,000 Calories)

8.00 a.m.	Porridge made with milk	8 oz. (227 g.)
	Scrambled or lightly boiled eggs	2
	Bread	2 oz. (57 g.)
	Butter	½ oz. (14 g.)
	Tea with milk and sugar	10 oz. (284 g.)
10.00 a.m.	Curds or Horlick's	10 oz.
11.00 a.m.	Tomato juice with milk	10 oz.
12.30 p.m.	Minced chicken or raw pulped liver	6 oz. (170 g.)
	Creamed potato	3 oz. (85 g.)
	Carrots or peas	2 oz. (57 g.)
	Egg custard with jam	6 oz. (170 g.)
3.30 p.m.	Egg flip	10 oz. (284 g.)
6.00 p.m.	Chicken soup	6 oz. (170 g.)
	Minced liver	6 oz.
	Creamed potato	4 oz. (114 g.)
	Egg custard	4 oz.
	Fruit jelly	4 oz.
8.00 p.m.	Ovaltine with milk	10 oz. (284 g.)
10.00 p.m.	Horlick's	10 oz.

High-protein Diet as Given in Hospital

(Approximately—215 g. Protein; 4,000 Calories)

8.00 a.m.	Porridge made with milk	8 oz. (227 g.)
	Eggs, poached or scrambled	2
	Bread	4 oz. (114 g.)
	Butter	1 oz. (28 g.)
	Tea with milk and sugar	10 oz. (284 g.)
10.00 a.m.	Curds or Horlick's	10 oz.
12.30 p.m.	Boiled chicken or fish	8 oz. (227 g.)
	Creamed potato	4 oz. (114 g.)
	Carrots or peas	3 oz. (85 g.)
	Milk pudding	6 oz. (170 g.)
	Bread	2 oz. (57 g.)
	Butter	¼ oz. (14 g.)
	Tea with milk and sugar	6 oz. (170 g.)
2.30 p.m.	Egg flip	8 oz. (227 g.)
4.00 p.m.	Bread	2 oz. (57 g.)
	Butter	½ oz. (14 g.)
	Jam	1 oz. (28 g.)
	Tea with milk and sugar	10 oz. (284 g.)
6.00 p.m.	Chicken soup	8 oz. (227 g.)
	Fried liver	6 oz. (170 g.)
	Potatoes	4 oz. (114 g.)
	Green vegetables	6 oz. (170 g.)
	Egg custard	6 oz.
	Fruit jelly	4 oz. (114 g.)
	Bread	2 oz. (57 g.)
	Butter	½ oz. (14 g.)
7.00 p.m.	Tea with milk and sugar	6 oz. (170 g.)
10.00 p.m.	Horlick's or ovaltine	10 oz. (284 g.)

Average Daily Diet in P.O.W. Camps

Breakfast: Pap rice with 1/2 teaspoonful sugar and tea Tiffin: Rice, vegetable stew, and tea Dinner: Rice, meat stew, rissole, and tea (Rissole—Rice and meat or vegetables mixed and fried into a cake)	Rice	14 oz. (400 g.)
	Vegetables	6 oz. (170 g.)
	Meat	3 oz. (85 g.)
	Cooking oil	1 oz. (28 g.)
	Sugar	1 oz. (28 g.)

In the early days of 1942 the diet in P.O.W. camps was supplemented by rations which our troops were allowed to carry with them. When these were exhausted they lived on polished rice. In the beginning the allowance for fish or meat was 4–6 oz. (114–170 g.), this being gradually reduced to 1–3 oz. (28–85 g.) and, the supply being irregular, often 7 to 8 days passed without meat or fish. In places where supplies were steadier the average health was fair. The issue of rice varied from 12 to 17 oz. (340 to 480 g.) per head per day in different camps, but individuals rarely consumed their total allotment, thereby losing the energy value. Milk was scarce, and the allowance of sugar of 1 oz. a day diminished towards the end and was finally cut out entirely. Animal protein, even when rations were available (3 oz. of meat per head per day), was inadequate. More often than not a plate of meat stew hardly contained one piece of meat. Vegetables issued were of a poor quality—e.g., pumpkin, radish, sweet potato, and marrow. Green leafy vegetables, if any, were negligible in amount. The vitamin content of the diet was very low, and with the increasing needs during repeated attacks of fever and wastage associated with bowel disorders, deficiency diseases appeared. About the end of 1942 there was an outbreak of ariboflavinosis—sore scrotum, sore tongue, angular stomatitis, etc.—which terminated after treatment with rice polishings, palm oil, and peanuts. Through local purchase and with the small sum of money they received, some were able to supplement their diets in small quantity with peanuts and bananas when available, and thus avoid the maladies of chronic starvation. The treatment of the sick was poor and inadequate, and convalescence, when allowed, was too short: the result being that, once ill, a man hardly had a chance of complete recovery. Thus repeated attacks of malaria and dysentery caused a large number of deaths.

Summary

Although a large number among the R.A.P.W.I. showed evidence of minor degrees of malnutrition, only ten cases from the severe group are reported.

The clinical pictures as presented are not those characteristic of a single vitamin deficiency, but are those that would follow a vitamin complex deficiency (multivitamin deficiency). Large doses of vitamins were therefore administered. Aneurin was given to aid metabolism—assuming that the reserves would be low though specific signs were absent.

In P.O.W. camps the diet was extremely low in proteins. Consequently, hypoproteinaemia and wasting resulted, the oedema of legs being the result of low blood proteins. The plasma proteins of all these patients were low—average 5.5 to 6.5 g. %, the lowest being 4.3 g. %. The presence of oedema was not proportional to the total plasma proteins (Case III, with plasma proteins of 5.2 g. %, had no oedema, while Case I had marked oedema even with plasma proteins of 5.9 g. %); but, from previous extensive experience of such cases, one can say that a correlation would have been revealed by estimations of the A.: G. ratio, which unfortunately could not be done here owing to lack of proper facilities.

Response to high-protein diet, and plasma transfusion in severe cases (I, II, and III), has been satisfactory.

Anaemia was present in all cases, both megalocytic (III and VIII) and microcytic (V and X). Response to haematinic therapy was good in both groups.

Weights have not been recorded owing to the lack of a reliable weighing machine, but a gain in weight was noticed in all cases except Case V.

Most of the patients gave a history of beriberi, which appears to have been diagnosed on the presence of oedema of legs only. This has been included in the past history on the patient's own statement.

While an adequate follow-up of the cases was impracticable, the progress of all patients between admission and evacuation two weeks later was satisfactory. Therapy designed to correct the deficient protein, vitamin, and haemoglobin contents of the body produced the anticipated improvements. The multiple deficiencies in each case necessitated multiple medication, and for this reason accurate apportionment of the credit to any one therapeutic agent is not possible.

I should like to end with an expression of gratitude to all those who made this investigation possible. The valued contribution of Capt. J. C. Valentine, I.A.M.C., on haematology and biochemistry, and the co-operation of the nursing staff, have been very much appreciated. I should also like to thank Lieut.-Col. G. A. Ransome, I.A.M.C., for his continued help and encouragement. My special thanks are due to Major-Gen. W. E. Tyndall, C.B.E., *M.C.*, Director of Medical Services, Headquarters, Allied Land Forces, South-East Asia, for permission to publish this article.

R. A. P. W. I.: AN IMPRESSION

BY

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These recovered Allied prisoners of war and internees were a group of people who had been in Japanese hands for the last 3½ years. The majority were captured at Singapore in February, 1942. The cases were British other ranks and civilian men, women, and children. The total number was about 1,000. Much of the material on which these notes are based has been the subject of clinical research—particularly by neurologists, ophthalmologists, and biochemists. Some interesting information has been obtained and will be published in detail elsewhere. The purpose of this article is to put on record the general impression of a group of such patients admitted to a British general hospital in Southern India.

Conditions

These varied from forced labour on the notorious Burma–Siam Railway, which is said to have cost a life for every sleeper laid, to comparative comfort in some civilian internment camps. The appreciation and gratitude of the patients varied inversely with the conditions from which they had been rescued. The British other ranks were all happy and contented. Their standard of discipline, judged by turn-out, saluting, etc., was higher than the majority of garrison troops. Most of the civilians were good patients, too, but a few were extremely difficult. One man went so far as to suggest he was better treated by the Japanese. This was countered by the suggestion that he must have been a collaborator, and no more was heard from him on the subject. It must be remembered that most of them had been leading a life of luxury right up to the time of internment, whereas many of the soldiers had been through hell even before they were captured. The main hardships in the camps were lack of food, bad living conditions and sanitation, and the harsh and often brutal treatment by the Japanese guards. Rations varied in different camps and also with the work being done, those on heavy work getting more than those on light duties. Anyone admitted to hospital was immediately put on half rations. This undoubtedly increased the mortality in diseases such as pulmonary tuberculosis. It may be said in passing that the Japanese appear to have treated their own sick with equal callousness.

Rice was the main food. In 1942 18–20 oz. (510–570 g.) a day was the average. The ration was cut in 1943 to 12 oz. (340 g.); thus a man going sick got only 6 oz. (170 g.). For a long time soup made from potato tops was the only regular addition. Later small quantities of meat, fish, and sugar were added, and later still they began growing their own vegetables. The common feature of all diets was gross deficiency in fat, protein, and vitamins; all patients showed great loss of weight, and most had signs of hypovitaminosis. One patient, aged 31, who had no serious illnesses managed to keep a record of his weight:—Before capture, 12 st. 10 lb. (79.8 kg.); August, 1942, 10 st. 4 lb. (65.3 kg.); February, 1944, 10 st. (63.5 kg.); December, 1944, 9 st. 7 lb. (60.4 kg.); May, 1945, 8 st. 6 lb. (53.6 kg.); June, 1945, 7 st. 10 lb. (49 kg.); July, 1945, 6 st. 7 lb. (41.3 kg.). Overcrowding occurred in all camps and sanitary arrangements were bad. Medical supplies were practically non-existent, but British medical officers were generally available.

Discipline was rigid, and failure to bow to the guards, even if unintentional, met with severe retribution. Punishment for the most trivial offences was brutal. One British N.C.O. had his jaw smashed with a rifle butt for stealing a turnip, and another was severely beaten up for protesting against his party being taken on a double work shift. Cases of maltreatment without any excuse at all seem to have been rare. The Japanese attitude to most of the women internees was one of indifference. To the children they were kind. The latter were easily the fittest of our patients. While this was due partly to sacrifices by their parents, there were cases where Japanese guards gave presents of sweets and other luxuries to them. On one occasion when Japanese generals visited a camp they distributed chocolate to the children. The fact that this had been obtained from looted Red Cross parcels was only known later.

The first to arrive at this hospital was a batch of 200 British other ranks who had come on an aircraft carrier. They were all walking cases, and anyone who saw them could never forget the experience. All showed emaciation, and some had oedema of the legs, but their morale can only be described as terrific. There was great superficial gaiety, but beneath this was a deep-rooted fear which showed itself when their faces were at rest. The frequent blinking and the shaking hand were a legacy of what they had been through. Their condition was aptly compared to that of the whipped dog returning to his master. The policy adopted by this hospital was to give them as much liberty as possible, and they were allowed to come and go as they pleased. While this made things difficult for the medical officer, who never found all his patients in the ward at any time, it was very good for the patients' morale. Special rations were provided, and with the aid of Red Cross parcels a generous and varied diet was supplied. All who were considered fit to travel were passed on as rapidly as possible. "Fit to travel" was the only criterion. Much good work was done by the ladies of the British Red Cross, who were always around helping to entertain the patients and ease their readjustment. An impromptu dance held on the day after they arrived was well supported and a great success. Cinema shows in the wards were given twice a week.

Medical Aspects

All patients showed malnutrition. As most had been released 10 to 14 days before admission to this hospital they had already gained weight—some as much as a stone (6.4 kg.). In addition the Japanese had increased their rations and released a number of Red Cross parcels during their last weeks of imprisonment.

Nutritional oedema due to hypoproteinaemia was very common. Most of these cases came to us labelled "beriberi." In some cases the oedema had been accompanied by hepatic enlargement and ascites. A number of these had teleradiographs taken of their hearts, which were found to be normal in size and shape. Not a single case of proved cardiac beriberi was seen. Macrocytic anaemia was present in many cases, with colour indices as high as 1.5. With improvement in the general condition the blood showed an increase in red cells and haemoglobin, and also a return towards the normal picture. "Jungle sores" were common. In some cases they were infected with the Klebs-Loeffler bacillus, which had given rise to local or generalized peripheral neuritis. A history of pellagra was often obtained, but here again objective evidence was slight. Scurvy was not seen.

Neurological Conditions

The most striking cases were those showing degeneration of the nervous system. They fell into three groups, of which the following were the main characteristics: (A) amblyopia, ataxia, and nerve deafness; (B) spastic paraplegia; (C) peripheral neuritis. Examples of Group A syndrome had been reported in prisoners released earlier from Rangoon gaol, so further cases were expected. Different parts of the nervous system appeared to show varying degrees of vulnerability, and the optic nerve, posterior columns, and auditory nerve tended to suffer in that order.

The amblyopia cases all complained of some degree of visual deterioration. It had started usually 6 to 9 months after capture, and had gradually increased. In others the onset had been sudden. Some degree of improvement was the rule, but complete recovery rare. Men who had not worn glasses previous to capture were now unable to read; others could read headlines only. Many complained that they could see things better at the side than in front. On examination they were found to have reduction of visual acuity, a central scotoma, and pallor of the temporal halves of the optic disks. This temporal pallor, which was striking, was also seen in a number of men who did not complain.

The ataxia, which was most pronounced in the legs but was seen also in the arms in some cases, was associated with loss of sense of position, vibration, and deep pain. The area of loss to vibration usually ended sharply at a level corresponding to some spinal segment.

By comparison with amblyopia and ataxia, nerve deafness was rare, but a few cases of the complete syndrome were seen.

In one of these cases the ataxia was thought to be partly vestibular in origin. It would indeed be surprising if the vestibular branch of the eighth nerve escaped entirely when the auditory branch was involved in the degenerative process. This syndrome was regarded by neurologists as a deficiency disease. There was some difference of opinion as to its nature. Lack of vitamin A was considered at one time, but the consensus of opinion was that it was due to shortage of the B complex.

The cases of spastic paraplegia formed a small but sharply defined group. They all came from two camps, and had developed about the same time within a period of six months. They showed gross spasticity, walking on the tips of their toes and unable to put their heels to the ground. Deep reflexes were exaggerated and plantar responses extensor. Cases occurred in men who had suffered less privation than average. One N.C.O. had been in charge of a cookhouse and fed comparatively well. It seemed probable that the cause here was some toxic factor, and neurological opinion favoured the diagnosis of lathyrism.

The cases of peripheral neuritis were not infrequently associated with signs of Group A syndrome, giving a mixed picture. Others, as already stated, were due to diphtheritic infection. A number were left, however, in which a diagnosis of neuritic beriberi seemed justifiable.

Diseases Present

Pulmonary tuberculosis was the most serious disease occurring commonly among them. This had already taken a considerable toll of lives before release. More than 50 cases were received here, showing all stages of the disease. The high incidence is not surprising considering the lowering of resistance by malnutrition, overwork, and intercurrent infection, particularly malaria. The overcrowded living conditions predisposed to the spread of the disease. Most of the cases are now doing well on sanatorium treatment, and it would seem reasonable to assume that the majority of these patients would never have developed the disease had they been leading normal lives. Thus it may be argued that as a group they have a higher basic resistance than a comparable group who have developed the disease in civil life.

The military patients had nearly all had repeated attacks of malaria. Some reported as many as 50 attacks. Though accurate counting becomes difficult after five or six relapses, it is certain that the majority of them had had many attacks. In sharp contrast were the civilians, most of whom had been living in Malaya for years before the war. Many of them had not had a single attack, and few had had more than one or two. This suggests an acquired resistance to the local strains. All Service cases were given a full course of mepacrine, if they had not already had it, and were instructed to take a suppressive dose for a further six weeks. It was felt that this would make freedom from relapse fairly certain during the journey home.

A remarkable feature of our series was the low incidence of dysentery. Our dysentery ward never had more than a dozen cases in it at any time. A considerable number of patients gave a history of proved amoebic dysentery. This had cleared up completely without any specific treatment, and full examination, including sigmoidoscopy, showed no abnormality. This confirmed an impression already gained—that in this disease the soil may be more important than the seed.

A few cases of sprue were seen, all in civilians, and they were our only patients who had suffered from being released. The sudden change-over to a full diet was too much for them and had a disastrous effect. One arrived *in extremis* and died within 24 hours of admission. Two others gave us a great deal of anxiety before they turned the corner. With strict dieting and transfusion they eventually made a good recovery.

Conclusion

To summarize, it may be said that the condition of these patients was, on the whole, better than might have been expected. The greater resilience of youth was seen in the more rapid recovery in Service cases. This was particularly marked in those showing nutritional oedema.

The medical attention these men and women had received from British doctors in the camps calls for the highest praise. Working usually without *x* rays or other equipment, they had made accurate diagnoses, which were confirmed when full investigation was possible. Where screening could be done pneumothoraces had been induced and maintained. The full and careful notes which the patients brought with them were of inestimable value to us in carrying on with their treatment. Finally, it may be said that our patients presented a true example of survival of the fittest.

My thanks are due to Col. W. J. Officer, O.B.E., commanding 114 British General Hospital, for his help and criticism.

TREATMENT OF ACUTE OTITIS MEDIA BY DECONGESTION

BY

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The role of ephedrine as a decongestive agent in the nose is well recognized. Its value in the treatment of middle-ear inflammation does not seem to be known.

Some three years ago I first used it to decongest the mucosa "pouting" through perforations in the acutely inflamed tympanic membrane in acute otitis media. The anticipated result was obtained. The mucosa became less turgid, the opening through the membrane was correspondingly enlarged, and drainage was facilitated. Resolution was thereby accelerated. The effect was the same, of course, whether the opening followed myringotomy or rupture of the drum. It may well be that some of the ephedrine solution also found its way into the middle ear itself and exerted its helpful decongestive action on the mucosa lining the cavity and the tympanic end of the Eustachian tube, with consequent improved drainage through the latter. Having enlarged the opening through the drum as described, the process of drainage was further enhanced by the instillation of glycerin drops after the ephedrine. These, of course, are helpful by virtue of their osmotic action. To this combination of ephedrine followed by glycerin the term "decongestion-osmosis" is applied.

The experiment was later tried of instilling the ephedrine solution into the ear in early cases of acute otitis media with an intact, congested, but not yet distended tympanic membrane. The effect was surprising. After a few applications, at four-hourly intervals, the drum became decongested, inflammatory appearances were dispelled, the landmarks became more clearly apparent again, and all evidences of a process towards resolution were demonstrated. Pain disappeared and the patient felt better. In the majority of cases the condition cleared up, being apparently aborted by the treatment. The term "decongestion" is applied to this procedure.

The rationale of the latter cannot readily be fully explained. It is empirical. My assumption is that the reduction in hyperaemia which takes place (obviously) on the outer surface of the drum results in a reflex mucosal decongestion inside the tympanic cavity and adjacent Eustachian tube, with consequent re-establishment of drainage through the latter. The irreversible process of an inflamed middle ear with exudate shut off beyond a blocked Eustachian tube is thus not allowed to develop, and so resolution by the usual sequence of events which takes place in favourable cases of inflammation can proceed unhampered.

Details of Treatment

The solutions used are 2% aqueous solution of ephedrine alkaloid or of ephedrine sulphate for the decongestion and pure glycerin when osmosis is also required.

(*a*) *Decongestion-osmosis.*—This is indicated in established cases of acute otitis media when there is a perforation or a myringotomy opening which is inadequate owing to inflammatory congestion. Clean discharge from the meatus. Then, with the patient lying on his side with the affected ear uppermost, instil a few drops of the ephedrine solution into the meatus. After ten minutes' interval instil a few drops of glycerin. The sequence should be repeated at least thrice daily until a freely flowing mucopurulent discharge is obtained. This should be achieved within the maximum of a few days. The usual lines of treatment may then be followed, I myself being partial

to the use of guttae argyrol 5% at this stage—either simply instilled or, when all signs of acute inflammation have gone, by the displacement method (Reid, 1939).

(*b*) *Decongestion.*—This is indicated in early cases of acute otitis media (i.e., within the first 48 hours usually) with an intact but inflamed non-bulging drum. The ephedrine solution only is instilled into the affected ear, in the same way as above described—a few drops being left to act for about five minutes. Repeat at least thrice daily. The case should be reviewed in three days, the patient being told to report earlier if the pain has not gone after the first three treatments.

Both the above procedures can be simply carried out by the patients with the assistance of someone at home, but they must, of course, report within the times specified—or earlier if pain persists.

Results

These are excellent. The logical decongestion-osmosis always proves beneficial when indicated. As regards the decongestion, it can be claimed that the majority of cases of acute otitis media abort with this treatment if it is instituted early enough. Also, no risk would appear to be involved. In no case has mastoiditis developed in consequence of delay in applying other lines of treatment because of decongestion having been employed. With this method of treatment myringotomy is much less often necessary, rapid resolution with an intact tympanic membrane being the rule.

The following figures of myringotomies done in the outpatient department theatre at the Children's Hospital, Birmingham, in 1944 and 1945 show the striking drop in the number of those operations since I introduced decongestion therapy in April, 1945.

	1945	1944
January	98	184
February	94	116
March	110	230
Decongestion therapy introduced		
April	63	147
May	36	137
June	17	155
July	14	78
August	14	73
September	8	48
October	17	92
November	12	89
December	20	66

The figures for January and February of 1946 are 16 and 8 respectively, compared with 98 and 94 for the corresponding months in 1945, when decongestion was not used.

Finally, it should be mentioned that this line of treatment is not advocated in conjunction with chemotherapy, in view of the masking effects of the latter on the middle-ear appearances, the changes in which should be carefully observed. Anyway, the use of chemotherapy should be reserved for only the more virulent forms of acute otitis media.

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A CASE OF INDIGENOUS MALARIA IN NORTHERN IRELAND

BY

N. V. BIRRELL, M.B., M.R.C.P., D.P.H.

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The "ague" has been present in England throughout historic times, but in recent generations it was little heard of until 1917. From September that year onwards until 1919 almost 600 locally contracted cases of malaria occurred in England. The cause of that outbreak was the return of large numbers of infected military personnel from malarious areas abroad, chiefly Greece, Mesopotamia, and Africa, to areas in England where anopheline mosquitoes were prevalent. Cases were scattered over South-East England, especially in coastal areas, and a small epidemic occurred in the Isle of Sheppey, in Kent. This outbreak was described in a report to the Local Government Board (1919).

Cases of endemic malaria were rare between the wars, but Shute (1944) drew attention to the possibility of an increase of indigenous malaria after the war then in progress was ended and when large numbers of infected Service personnel would be returning from abroad. One such case is here described, and it is considered to be of especial interest as it occurred in Northern Ireland—an area in which malaria does not appear to have been previously recorded.

Case History

The patient was a member of the W.R.N.S., aged 24, who was admitted to a naval auxiliary hospital in Londonderry on July 16, 1945. She gave a history of headache and attacks of shivering and sweating for a week previous to admission. Her temperature, which was 101° F. (38.3° C.) on admission, was normal next day. It rose to 105° F. (40.6° C.) on July 18. The tongue was heavily furred, but no physical signs were found to account for her pyrexia. She was well again on the 19th, but on the 20th her temperature rose to 104° F. (40° C.). The temperature chart was by now typical of tertian malaria, and a blood slide taken that day showed a heavy infection with benign tertian parasites. She responded well to treatment and there were no complications. The spleen was not palpable at any time. Blood counts showed 4,500,000 red cells per c.mm. and a haemoglobin of 90%. The patient had never had any similar illness before, and she had never been outside England and Northern Ireland.

Comment

The chief point of interest in this case lies in trying to trace the place where infection occurred. For the transmission of malaria the necessary factors are: (1) the existence of human carriers of malaria with gametocytes in the peripheral blood; (2) the existence of suitable mosquito vectors; (3) certain further conditions which are not yet fully understood, but which include a suitable temperature for the development of the parasite in the mosquito. Studies of malaria in England and in other temperate climates have shown that, under the conditions there, cases of malaria tend to occur in two main seasonal groups. Primary infections may develop symptoms either in the late summer and early autumn—that is, when conditions for transmission are most suitable—or in the spring months of March, April, May, or even June. It is presumed that this second group of cases have been infected during the previous summer but that the infection has remained latent for a period of from 6 to 9 months. This phenomenon has been discussed by Shute (1939).

The subject of this present case had spent 1944 at Southampton and Newhaven, with occasional brief visits to her home at Braintree, in Essex—an area where malaria is known to occur. In March, 1945, she was drafted to Londonderry and remained there until she took ill, except for a visit to Braintree from April 20 till May 1, on leave. That visit may be left out of consideration as a possible time of infection as the early summer mosquitoes would not yet be hatched out. It remains to decide whether this patient was a latent case, infected in England during the previous summer, or was, in fact, infected in Northern Ireland.

Her work kept her in the naval dockyard by day, while her living quarters were in a Nissen hut, one of eight in the grounds of a large house about a mile north of the centre of the town. Search of the area around these quarters showed that anopheline mosquitoes were breeding in a small pond about 200 yards away. Larvae from this pond were kindly identified for me by the Ministry of Health Malaria Laboratory, Horton Hospital, Epsom, as *A. maculipennis.* This is the most usual British malaria-carrying mosquito, and it was no doubt breeding in other suitable places in the district. Carriers of malaria were numerous in the Londonderry area during the spring and summer of 1945, as during the previous autumn the local Territorial regiment, numbering several hundred strong, had returned home after five years in the Middle East and Italy. Of these men some had been demobilized, while others were home on leave from time to time. Moreover, primary and relapse cases of malaria were almost always under treatment in the hospital from among the many hundreds of naval and Air Force personnel stationed in the area, of whom a large proportion had served in malarious areas abroad during the war.

It must now be considered whether it is likely that the processes of infection of a local anopheline, development of the parasite within it, infection of the patient, and incubation of the disease could have taken place before July 9, which was the date on which the first symptom appeared. The time taken for the parasite to develop in the mosquito is largely governed

by temperature. At an average temperature of 70–80° F. (21.1–26.6° C.) the cycle for B.T. parasites is completed in about 10 days. At 60° F. (15.5° C.) it takes 30 days. It has been stated to take about 14 days at 62–68° F. (16.6–20° C.). The spring of 1945 was an unusually mild one, and so too was the month of June. Records supplied by the meteorological officer of a nearby naval air station showed that from June 3 to 7 the maximum daily temperatures were from 61 to 65.6° F. (16.1 to 18.6° C.), and that from June 17 onwards the daily maximum was never below 60° F. (15.5° C.). There was a spell of warm weather from June 18 to 24, when for a large part of the day the temperature was 65° F. (18.3° C.) or higher and twice exceeded 70° F. (21.1° C.). These temperatures, however, do not necessarily represent those at which the adult female mosquitoes were living during this period, as they spend much of their time indoors, in buildings where they can get meals of blood, especially in animal-houses. In the absence of such accommodation it may be assumed that they would find the Nissen huts, warmed by stoves and containing sleeping Wrens, acceptable alternatives, and with temperatures generally higher than out of doors.

Mosquitoes which came out with the first wave of summer hatchings, usually in the first week of June, could be given a week in which to become infected, and, allowing 12 days for the incubation period in the patient, would still have 17 or 18 days in which to develop the parasite within them. At the temperatures of June, 1945, that does not seem an unreasonable period to allow. The first week of July was also warm, with maximum temperatures of over 70° F. (21.1° C.) on two days.

I believe that such evidence as is available supports the contention that this case of malaria was infected in Northern Ireland. It would be well for practitioners there, as elsewhere in the British Isles, to be on the look out for similar indigenous cases this spring and summer.

I am indebted to the Medical Director-General of the Navy for permission to publish this case.

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Medical Memoranda

Coma as Onset in a Case of Malaria in England

Although many medical men in this country are becoming increasingly familiar with the signs and symptoms of malaria, it is possible that some may not recognize as being due to that complaint a case of coma in a patient not previously suspected of malaria. The following case history is that of a patient in whom two brief periods of fever and, later, some degree of anaemia were the only pointers to the possibility of malarial infection—until the evening on which a sudden coma resulted from blockage of the cerebral vessels with the merozoites and the corpuscular fragments, and a very high fever developed.

CASE HISTORY

A previously healthy young male subject, aged 23, had spent eleven months in West Africa and had returned to England six weeks before his admission to Redhill County Hospital. During his stay in West Africa he had taken 10 gr. (0.65 g.) of quinine daily as prophylaxis, but discontinued this on leaving Africa. A few days after his return to England he had two very brief bouts of fever. He felt apathetic and rather sleepy often during the succeeding weeks, and for a week before his admission to hospital he had been resting at home on iron therapy from his own doctor for anaemia. Twenty-four hours before admission he complained of some pain in his right arm, but the coma and the high fever (105° F.: 40.6° C.) which occurred on the following evening were unexpectedly sudden in their development.

At admission he was lying still, deeply comatose, very pale, and showing a temperature of 104.2° F. (40.1° C.). Breathing was rapid (36), deep, and very noisy. Pupils were moderately dilated and did not react to light. There was no neck rigidity. Tendon jerks were all grossly exaggerated and there was bilateral ankle clonus. Plantars were both definitely extensor and abdominal reflexes were all absent. The spleen tip was felt 3 in. (7.6 cm.) below the left costal margin. The lungs showed only a little bronchitis.

A blood film was taken, and 20 gr. (1.3 g.) of quinine bihydrochloride was given intravenously. Increased hyperventilation followed the injection, but with subsequent tepid sponging the temperature fell and the patient rapidly recovered consciousness. The blood film showed large numbers of malignant tertian parasites.

Next morning the patient was quite alert and bright, but was still very pale and the conjunctivae showed a trace of bile. The spleen was still 3 in. below the costal margin. The blood count was: Hb, 40%; R.B.C., 1,720,000; C.I., 1.17; W.B.C., 3,260 (P. 52%, L. 40%, M. 8%). Tendon jerks were still increased, but much less than on the previous night; there were only a few catches of ankle clonus on each side, and the plantars were now flexor.

The succeeding days on quinine bihydrochloride 10 gr. (0.65 g.) t.i.d. and mepacrine 0.1 g. t.i.d. were marked by steady improvement. The size of the spleen gradually diminished, the tendon jerks slowly became normal, and the colour improved. On the third day the quinine dose was reduced to 5 gr. (0.32 g.) t.i.d., and ferri et ammon. cit. was given, at first 45 gr. (3 g.) daily, but soon the dose was raised to 90 gr. (6 g.) daily. Six days after admission the spleen could no longer be felt, but there was still a tendency to exaggeration of tendon jerks in the legs. The abdominal responses were now normal.

The patient was discharged on the seventeenth day, after a final five days on 0.02 g. of pamaquin thrice daily; and by then his blood count was: Hb, 70%; R.B.C., 3,860,000; C.I., 0.92; W.B.C., 6,400 (P. 72%, L. 20%, M. 7%, E. 1%). The temperature remained normal after the second day, and after the first examination no parasites were found in the blood. When seen two months after the attack the patient showed no anaemia and reported no further relapses.

COMMENT

A case of malignant tertian malaria is described which had been suppressed by prophylactic quinine, but which, about eight weeks after the end of prophylaxis, suddenly revealed itself by the symptoms of profound coma with quadriplegic tendencies, hyperpyrexia, and overbreathing. The diagnosis, which was immediately suspected because of the development of these symptoms in a patient lately arrived from West Africa, appeared most probable when it was found that he was also profoundly anaemic, and showed marked splenomegaly and some signs of bronchitis. Strong antimalarial treatment was immediately beneficial, and subsequently his progress has been uninterrupted.

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Delayed Healing of a Vesico-vaginal Fistula by Inflammatory Reaction

This case is worthy of record because of the notorious chronicity of vesico-vaginal fistulae, and also because of the very extensive surgical procedures required when vaginal closure is not possible.

A native girl aged 19, a para-1, was seen by me early in May, 1945. She gave a history of a long difficult labour about nine months previously, and of continual incontinence of urine dating from about the time of her puerperium. Vaginal examination revealed a large vesico-vaginal fistula, easily admitting the tip of my middle finger, in the anterior fornix. Although palpation led me to suspect considerable scarring, I decided to attempt operation. I then found, however, that the cicatrization made it impossible to pull down the cervix and see the fistula. I attempted to suture, working "blind," but abandoned this as technically impossible. Two sutures which I managed to insert cut through the friable tissue when tied. I then scraped the edges of the fistula with a small sharp scalpel in the faint hope of causing enough tissue reaction to close it or to reduce it in size.

For some weeks after this operation there was no sign of improvement, and I began to consider intravesical closure, and, if that failed, colpocleisis as recommended by Cameron (1925) in such cases. It was, however, suggested to me by a colleague that ureteric transplantation might offer a better chance of cure, and it was decided that this should be attempted in two months' time. The girl meantime went home to her village.

She returned at the end of August, saying she was now better. To my surprise vaginal examination revealed that the fistula had indeed closed and there was nothing to be felt in the anterior fornix but a mass of scar tissue. While the fistula had undoubtedly closed, I gave a very guarded prognosis with regard to its remaining so, especially in the event of another pregnancy.

This case is interesting because of the considerable size of the fistula, and because all sign of reaction to operative intervention locally had disappeared long before she was sent back to her village. It suggests that in cases of inaccessible vesico-vaginal fistulae it might be well to try to promote a local reaction and then wait some considerable time before undertaking more drastic procedures.

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Reviews

PHYSICAL CHEMISTRY OF CELLS AND TISSUES

Physical Chemistry of Cells and Tissues. By Rudolf Höber. With the collaboration of D. I. Hitchcock, J. B. Bateman, D. R. Goddard, and Wallace O. Fenn. (Pp. 676. 42s.) London: J. and A. Churchill. 1945.

Many readers will welcome this book. Physical chemistry is not represented in the biological or medical field by a separate subject, nor would such a specialization be desirable. Cells and tissues are heterogeneous systems composed of aqueous and lipoid phase, of fibres, and these structures are the material of all who study the properties of living matter, whatever their own method or approach.

This book is subdivided into a number of sections, written by five different authors. The first section, by D. I. Hitchcock, is an outline of the biologically important basic principles of physical chemistry. The mathematical treatment of the subject would have been made clearer by examples and by being less condensed. The reader is often referred to other textbooks, when a more extended treatment is needed. J. B. Bateman's contribution is entitled "Large Molecules"; it deals with the electrical and chemical forces determining the properties of these molecules and with the way in which they interact. This section also contains a discussion of the use of *x*-ray methods for the study of fibres, and of the properties of monolayers and similar membranes.

These two physical sections are followed by the discussion of biological systems; R. Höber has written admirably on the properties of the protoplasm and its surface; on the response of cells to environmental factors, in which he includes a discussion of great value on the action of narcotics on cellular activity; and on the transport of substances across cell membranes (passive transfer, absorption, secretion). D. R. Goddard deals with cell respiration and respiratory enzymes; this account is extremely instructive. There is a section on contractility by W. O. Fenn which was unfortunately written in 1942, for since then a great deal has been discovered concerning the biochemical properties of muscle proteins, especially myosin, and this knowledge is to-day the central point of discussion on contractility.

The book contains a great number of references, and it is an especially pleasing feature that the valuable pioneering work of earlier generations is given full recognition. In the preface the editor gives a brief exposition of the point of view from which this book has been written, and he stresses the fact that it is chiefly the outlook of the physicist which has been adopted. In the study of living matter the dividing line between chemistry and physics becomes so blurred as to be of little significance; but it is true that the successes of the biochemist and the organic chemist, in the field of therapeutics and in applied biology in general, have tended to stress the importance of the organic chemist. There is little doubt that the book will help in correcting this tendency and that it will be of use to all—chemists, physicists, and biologists alike.

PROTOZOOLOGY

Protozoology. By Richard R. Kudo, D.Sc. Third edition, revised and with two new chapters. (Pp. 778; illustrated. $8.00.) Illinois: Charles C. Thomas.

The popularity of Prof. Kudo's textbook is evidenced by the fact that though first produced only seventeen years ago a third edition is now issued. The present volume is some 80 pages longer than the last edition, and is profusely illustrated with more than three hundred excellent black-and-white figures, and four new half-page colour plates of the human malaria parasites.

Part I, some 190 pages, discusses very thoroughly in six chapters the appearance, habits, physiology, and reproduction of protozoa generally. Part II deals systematically in 44 chapters with the taxonomy and special biology of the very numerous genera and species of free-living and parasitic protozoa. Each chapter ends with a list of references to literature concerning the organisms discussed. The final chapter is devoted to a discussion in 30 pages of the technique of collection, cultivation, and observation of protozoa. A 47-page index terminates the book.

The medical protozoologist deals with a very small number of protozoa, but concerning them he requires detailed information. On the other hand, the parasitic protozoa of man and domestic stock form for the systematic protozoologist only a small section of his subject and, therefore, only some 80 pages are devoted in this book to these parasitic forms. The human intestinal amoebae (10 pages) and the human malaria parasites (11 pages) are fairly fully described, but only four pages are allotted to the human trypanosomes, and *T. rhodesiense* is dismissed in 12 lines. Most of the important trypanosomes of domestic stock are mentioned—some are omitted—but the description of the morphology of these species is insufficient for the purposes of identification. The book cannot, therefore, be recommended to the medical man or veterinary surgeon wishing detailed information about protozoa in his particular field. It will, however, be of value for reference to the medical or veterinary protozoologist, since it covers systematically the whole field; relates together the various orders, families, and species; and describes large numbers of organisms which may occur as contaminants in material sent for examination. The sections on the free-living protozoa of water will be of value to those responsible for water supplies.

In spite of its increased length the work still retains its compact form and excellent print.

PRACTICAL OBSTETRICS

The Midwife's Textbook of the Principles and Practice of Midwifery. By R. W. Johnstone, M.D., F.R.C.S.Ed., F.R.C.O.G. Second edition. (Pp. 381; illustrated. 18s.) London: Adam and Charles Black.

Prof. Johnstone's excellent book is written for pupil midwives, but its text is so clear, concise, and so well illustrated, and its teaching so logical and effective, that it can be recommended to a much wider circle of readers. Medical students and busy practitioners alike would find much of profit in these pages. The author has omitted discussion of general anatomy, physiology, and pathology, referring those who may wish for further details of these to the books already published for pupil nurses. In their place he has introduced more obstetrical details of interest and importance than one usually finds in a work of this size. The anatomy of the pelvis and the physiology of menstruation and pregnancy are dealt with in the first 48 pages of the new edition. The succeeding chapters deal with the foetus, the principles of antenatal care and hygiene, labour in the various presentations, the normal puerperium, asphyxia neonatorum, pathology of pregnancy, pathology of labour, pathology of the puerperium, drugs and solutions in common use in midwifery, obstetrical operations in domiciliary practice, antenatal and postnatal exercises, the newborn child, and radiography in obstetrics. Two valuable concluding chapters are those on midwifery in relation to public health and the history of midwifery.

The section dealing with post-partum haemorrhage is excellent, and particular mention should be made of the valuable advice on preventive treatment. The midwife is reminded that good midwifery in its widest sense, antenatal and intrapartum, is necessary to reduce the incidence of post-partum haemorrhage to a minimum.

ELECTRICAL INJURIES

Der elektrische Unfall als pathologisch-anatomisches, klinisches und unfallmedizinisches Problem. By Dr. Fritz Jenny. (Pp. 144; illustrated. 12.50 Sw. francs.) Berne: Medizinischer Verlag Hans Huber.

To readers who understand German there are one or two volumes available on the subject of electrical and lightning injuries. To these may now be added this little book written by Dr. Jenny of Lucerne. The author deals in orthodox fashion first with the technical details which determine the severity and location of electrical injuries. This preliminary section is followed by a description of the effects as they appear in the various organs and tissues. Brief case reports are given and there are a number of excellent illustrations. The vexed problem of the cause of death after electrocution is considered in a special chapter. There is some reference to the subject of electronarcosis, and the studies of Cerletti and Bini upon electrically induced convulsions find a place. Dr. Jenny does not

have much to say upon the historical aspects of his subject. A useful bibliography is given, but unfortunately it is far from complete. Medical problems connected with lightning-stroke are referred to only very briefly, as are the questions of accidents occurring from *x*-ray apparatus.

One may summarize by describing this book as a competent introductory thesis, interesting and well produced. In the case of such a specialized subject, however, a full-dress monograph is sadly needed. It is a matter for comment that no manual, large or small, exists in the English language upon electrical injuries. This is a defect which should be remedied, for electrical injuries and their sequelae already play a not inconsiderable part in industrial medicine, and the problem is one we might expect to increase rather than to diminish.

SPRAINS OF THE INSTEP AND OF THE KNEE

Entorses du Cou-de-pied et Entorses du Genou. By L. Léger and C. Olivier. (Pp. 218; 85 figures. 200 francs.) Paris: Masson et Cie.

This interesting monogram is really a study on Leriche's classical discovery that many of the results which follow on a sprain can be abolished by the early injection of novocain into the damaged area. The authors open with a discussion of what is meant by sprain, and give a most precise account of its ascertained anatomy, physiology, and pathology. They then discuss the mechanism by which sprains of the instep are produced, their results and treatment, with, of course, special reference to the work of Leriche.

A similar examination is made of sprains of the knee, including more severe injuries such as those which involve rupture of the crucial ligaments. The late results of such injuries and the most modern methods of repair are fully described, and illustrated by excellent diagrams. In conclusion, chronic arthritis and painful knees of obscure origin are discussed.

This is a monograph of considerable importance. The authors are evidently well acquainted with the whole literature of their subject, which is accurately summarized, and they possess a wide and varied practical experience. The line diagrams by which they illustrate the text are admirably designed and beautifully executed. It is a fine study and a valuable addition to an important branch of surgery.

Notes on Books

The Epic of the Red Cross; or, The Knight-Errant of Charity, by FERNAND GIGON (Jarrolds Ltd.; 12s. 6d.), is the life story of a Genevan, Jean-Henri Dunant, who in 1864 became the recognized founder of the Red Cross International Society. He was contemporary and the counterpart of Florence Nightingale. Both were roused to action by the sight of thousands of untended wounded and dying soldiers—he at Solferino and Florence Nightingale at Scutari. Dunant had a grim fight in carrying out his propaganda work. No one from the Emperor Napoleon III downwards could withstand his persistence, till at last his plan for the methodical organization of a body of voluntary workers, in aid of wounded soldiers, came into being. His programme was to foster the establishment, during international peace, of charitable societies, whose aim would be to organize bands of well-trained workers. The German Emperor William I, as Grand Master of St. John of Jerusalem, took a deep interest, as did all other European crowned heads, in the Red Cross work of the Geneva Convention. Since the first world war began the work of the Joint Committee of the British Red Cross Society and the Order of St. John, in aid of suffering humanity, has assumed gigantic proportions, reaching a figure of £50,000,000. Fernand Gigon's book is confined to Dunant's epic struggles for the realization of his dream, which came true before he died in 1910 a worn-out but happy man.

A fifth edition has now been published by J. and A. Churchill (12s. 6d.) of *Practical Biochemistry for Students of Medicine*, by A. T. CAMERON and Dr. FRANK D. WHITE, of the Faculty of Medicine of the University of Manitoba. It appeared first in 1930, and the authors' guiding principle continues to be that this book should, if anything, err on the conservative side, employing old tested methods rather than newer, less tested ones. In the new edition they have revised the tests concerned with the clotting of blood, so as to illustrate the chief features of Quick's theory. Brief directions are included for estimating hippuric acid excretion as a measure of liver function, and for estimating urobilinogen in urine, and the account of a basal metabolism determination has been revised to conform more closely to present clinical apparatus.

Dr. BERYL TWYMAN has written a modest little book on *Some Minor Ailments of Childhood* with the subtitle *Being Hints for Mothers* (E. and S. Livingstone: 9d.). It is a happy mixture of common sense and sound teaching on physical and psychological disorders. The poetry quoted at the end serves as a reminder that mothers north of the Tweed have probably had a better general education than their southern sisters. It is a safe and suitable booklet to supply to intelligent mothers at child welfare clinics.

After only three years the South African textbook on *Medical Jurisprudence* by Drs. W. F. RHODES, I. GORDON, and R. TURNER has reached its second edition and is well on the way to becoming a classic. This edition contains a considerable amount of new material, and the earlier text has been largely rewritten. The chapters on identity, mental illness, workmen's compensation, the constitution and functions of the South African Medical Council, the registration and certification of births and deaths, and medical negligence are all new. The book covers that field of forensic pathology which is common to most countries, but not fully enough to compete with the fuller textbooks from this country or the United States. Within the Union of South Africa, however, it is unique and will become increasingly popular and indeed indispensable. The publishers are the Stewart Printing Company of Capetown, and the price is 32s. 6d.

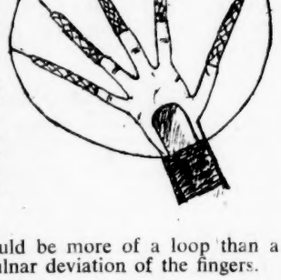
The changes which have been made in the second edition of *Nitrous Oxide–Oxygen Anesthesia*, by F. W. CLEMENT (Henry Kimpton; 22s. 6d.), are those of the detail rather than the scope of the original text. The author is evidently aware of the considerable apprehension on the part of anaesthetists concerning the dangers of anoxia, and of the growing criticism of nitrous oxide on that account. He does not hesitate, therefore, to include a somewhat apologetic chapter in which this question of anoxia is reviewed and the critics are answered. Even though some of the views expressed may not be acceptable, every anaesthetist should read this book, as an excellent exposition of nitrous oxide–oxygen anaesthesia as practised by the McKesson school.

Preparations and Appliances

FINGER TRAPS FOR BANJO SPLINT

Dr. G. R. P. ALDRED-BROWN, consulting physician, Royal National Hospital for Rheumatic Diseases, Bath, writes:

For many years past, and especially since the rubber shortage, I have used plaited finger "traps," as they are known in the toy trade, for obtaining extension and correcting alignment of fingers. The banjo splint used is the ordinary type with stout wire circle fixed to a metal palm rest, and the wrist attachment consists of either a leather gaiter or a plaster splint.



These finger traps obviate the use of adhesive tapes and rubber band pulleys. The tip of the finger fits into the trap and is gripped firmly. The elasticity is imparted by the plaited raffia, which exerts a continuous traction. The wire ring should be notched in five places to receive the fine string which is threaded through the top of each finger trap by means of a carpet needle. It is advisable to have the wire circle sufficiently large to allow for the length of the fingers plus the length of the finger traps.

The wire can be bent to any required shape, and in fact should be more of a loop than a circle if it is desired to correct ulnar deviation of the fingers.

The finger traps are obtainable, price 9d. each, from Messrs. Paul Clive and Co. Ltd., Back 68, Cocker Street, Blackpool.

Messrs. Ward, Blenkinsop & Co. Ltd., of Liverpool, offer phenylmercuric nitrate in solution for sterilizing wounds, for treating vaginal infections caused by *Trichomonas vaginalis*, and for treating tinea and epidermophytosis. It is supplied as a 1% solution in diethylene glycol. They also offer dithranol, which is used for the same purposes as chrysarobin, but chiefly for psoriasis, for which it has been found effective. Dithranol, which is dihydroxyanthranol, is official in the sixth Addendum to the *B.P. 1932*.

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THE LORDS ON THE HEALTH SERVICE

Public debate and concern about the Government's hospital proposals continue. Medical and lay opinion has been perplexed by a division of opinion in the medical profession on the Minister's proposal that he should become the owner of all the hospitals in this country. This arose because of the Consultants' Services Committee's resolution that it approved the transfer of ownership of hospitals provided the composition of the Regional Boards is satisfactory. This resolution was submitted to the constituent bodies of this committee. Of these the Royal College of Surgeons, the Royal College of Obstetricians and Gynaecologists, and the British Medical Association have stated their opposition to the suggested transfer. When the matter was debated by the Comitia of the Royal College of Physicians last week the following resolution was passed : " That the College approves the central direction and co-ordination of the general policy of hospitals provided the composition of Regional Boards is satisfactory." The consultants and specialists, in so far as they are represented by the three Royal Colleges, have, therefore, not approved of the resolution of the Consultants' Services Committee. The Council of the British Medical Association has expressed itself unequivocally in opposition. It is fair, therefore, to say that the majority of the profession through its representative institutions finds itself at variance with the Minister of Health on one of the principal features of the Bill shortly to be debated in the House of Commons.

Many of the grounds for misapprehension were expressed by several speakers in the informative debate opened last week in the House of Lords by the President of the Royal College of Physicians, Lord Moran. The timing of events made a full discussion impossible. As the Government spokesman in the debate observed, the proper occasion for the Government to submit their case was during the second reading debate on the Bill in the Commons, and subsequently when that stage was reached in the House of Lords. At the end of the debate Lord Listowel therefore asked Lord Moran to withdraw his resolution, " in view of the danger of precipitating a premature decision." The Lords, therefore, had to confine their remarks to statements in the White Paper and avoid reference to clauses in the Bill. Lord Moran probably timed his motion in the general anticipation that the second reading of the Bill would take place in the House of Commons before Easter. But this reading has been postponed until May. In spite of these limitations the Lords taking part found the opportunity to express opinion on the various aspects of the hospital problem in a way which should be most helpful to those who have to carry on the debate in and out of Parliament.

Lord Moran moved to resolve " that this House, while regretting any measure which might impair the efficiency of the general practitioner service, welcomes proposals for the better co-ordination of the hospital services of the country." There could obviously be no dissentient voice to this unexceptionable proposition. Asking whether " a drastic reorganization " of the hospital system of the country was necessary, he concluded that the answer was to be found in the hospital surveys made by the Ministry of Health during the war. He pointed out that one-third of the 93,000 beds in the 1,059 voluntary hospitals in England and Wales were provided by hospitals having fewer than 100 beds. These hospitals, he believed, were too small to fulfil the functions of a first-class hospital, and in many of them major surgery was performed by men without surgical training, " and the duties of physicians are usurped by those who have not had the training of the physician." Of the 152,000 beds in municipal hospitals 78,000 were for general purposes—i.e., excluding infectious diseases, etc. Of the 78,000 beds 29,000 were in public assistance institutions—institutions which provided little but food and shelter. On top of this disturbing state of affairs were the difficult financial circumstances in which the voluntary hospitals were now placed. This meant that they would have to call upon the Government for a considerable sum of money for the hospitals, and with public expenditure on this scale some measure of public control would be necessary.

Lord Moran then asked the question, " Who is to exercise that control ? " Was it to be the local authorities or the Minister working through the regions ? He considered that " local authorities had behaved with great patriotism in accepting the proposals of the Minister in the White Paper, which must be very unpalatable to them." He went on to observe that professional discussion during the past few years had been dominated by the fear that hospitals would come under the control of local authorities. " It is because this White Paper," he continued, " appears to lift that menace from the profession that so many consultants and specialists are reconciled to the passing of the voluntary system." We should perhaps reiterate at this point the fact that the three Royal Colleges which represent the great majority of consultants and specialists in this country are not only *not* reconciled but are opposed to the passing of the voluntary system. After discussing briefly why the profession regarded local authority control as a menace Lord Moran stated that if hospitals are not to be controlled by local authorities they must be controlled by the Minister. " But when we proceed to ask the Minister who exercises this control—whether it implies the transfer of ownership of hospitals —agreement ceases, and there is great difference of opinion in the profession on this particular point."

Pursuing the question of ownership, on which he made it plain he was speaking personally and not for his colleagues, Lord Moran said that if the change of ownership took place they would gain co-ordination of hospitals,

financial peace, progress unhampered by poverty, and freedom from the local authority "menace." "Further, the Minister of Health has refused to blunt the growing edge of medicine, for the teaching hospitals are left alone." Perhaps we should complete this observation by referring to the Minister's proposals to take over the ownership of the teaching hospitals and to appoint their governing boards and chairmen. To the question "What do we lose?" Lord Moran gives his own answer: "We lose the voluntary system." And to his next question: "Why has the name of the voluntary system gone over the world?" he gives the reply that the ablest men in the profession have chosen to work within the walls of voluntary institutions from which "almost every addition" to medical knowledge has come. Further extolling the virtues of the voluntary hospital, Lord Moran observed that it had a personality of its own which "stirs up around it a spirit of service." If they lost the local interest they would lose something of great value, not only to the hospital but to the community. The work of the voluntary hospitals had been the expression in peace of the altruism of war. Coming to the composition of the regional boards, he believed that their members should be hand-picked, and he hoped that information on this point would be forthcoming. He summed up many professional apprehensions in this observation: "I can only envy the Minister in his ready assurance, gained in the few hours he can take off from housing, that by turning a profession upside down he will necessarily provide a better service for the people."

The spirit of voluntary hospitals and the importance of local enthusiasm and loyalties were stressed by other speakers, and there was agreement with Lord Inman's view that waste should be eliminated and that financial obstacles should be removed: he did not see why voluntary support should not continue. Lord Donoughmore deplored the division of the hospitals into two systems, applauded the government of the voluntary hospital by the elected board working in harmony with a medical committee, and doubted whether the medical superintendent of a municipal hospital was a wise substitute for the medical committee. He made the interesting observation that one of the important municipalities in the Midlands has abolished the post of medical superintendent and established a medical committee in one of its hospitals. This, it seems to us, is a pointer to a reform of the municipal hospitals which would remove nine-tenths of the professional objection to them. Lord Donoughmore expressed his alarm at an advertisement in the *Hospital*, in which the Ministry of Health invited applications for posts as "nursing officers," the applicants being warned that they might have to live in any one of ten cities in England. Were these officers going to work under the regional boards or under the Ministry of Health independently of them? Lord Luke, agreeing that there must be some co-ordination of the health services, asked whether it was wise "completely to standardize when at the present moment we have variety." He thought that the voluntary hospitals might be dealt with in the same way as the voluntary schools. The White Paper proposals aimed at legislating out of our country local interest and pride "for the sake of tidiness in a great scheme and for the sake of very remote control." While they had heard much about the endowments which were to be taken over from the hospitals—the figure mentioned was £32,000,000—they had not heard so much about the value of the buildings, equipment, and land also to be transferred. The total value of what it was proposed to take over from the voluntary hospitals was in the nature of £250,000,000. Lord Luke felt that a Government Bill should be framed to encourage all that is best in the existing structure, and not to destroy everything and start from scratch "with a lot of disgruntled people." Lord Horder, in a brief speech, thought that Lord Moran had somewhat expanded the wording of his motion, and contented himself with quoting the statements made by the King's Fund, the British Hospitals Association, and in the leading article published in the *Journal* of April 13 (p. 575).

In replying for the Government Lord Listowel said it would be a mistake for the Government to lay down in advance the exact constitution of the Regional Boards, because their size and composition would vary according to the needs of the different areas. The boards would consist of people chosen for their individual suitability, not as delegates or representatives of different and possibly conflicting interests in the area. It was extremely unlikely that on any board any one element or interest would be in a position to obtain a clear majority by outnumbering the others. The letters in the *Times* suggesting a larger measure of independence for local management committees would be bound to command respect. For the future administration of the hospitals the Government would aim at securing the maximum amount of devolution and local independence within the regional framework. "Decentralization is itself the goal, and no more central control is wanted than an efficient and co-ordinated service necessitates." Both Regional Boards and Management Committees would have "unfettered financial freedom within the limits of their annual budget." There would be no Treasury interference in the detailed allocation of this. One of the main objects of the Bill was to provide a planned and co-ordinated hospital and specialist service, and this would be defeated if the new services were broken up into isolated and disconnected units.

As the above summary shows, the debate was centred mainly on the hospital service, but a number of speakers also made observations on the White Paper proposals for a general practitioner service. Lord Moran, for example, was satisfied that there was "fairly general disquiet among practitioners about the future." The principal reason for this was the dread that the proposals might lead to a whole-time service. He thought that the life of a general practitioner during recent years had lost something of its colour, because he had seen treatment of serious disease pass into the hospitals and out of his hands. Lord Geddes said he felt strongly about the future scheme for general practice. He did not think that the "polyclinics . . . called health centres" would make for confidence between patient and doctor. He could well imagine a man or a woman being unwilling to go to such a centre because of the recording of some malady "on some bit of paper which would pass

through the hands of some not very responsible clerk." He observed that the secretarial service would be provided by the authority owning the centre. If there was something in the organization of the centre which would make the patient feel it was not safe to go to it, harm would be done. Was it not possible instead to provide diagnostic centres? He hoped that when the series of proposals had passed through the necessary stages before becoming the law of the land it would be found that "we are dealing with a medical service in this case, and not with a thing miscalled a health service." Lord Piercy, on the contrary, thought that under the new conditions the life of the ordinary doctor would become more interesting and stimulating than it is now. The mass of the population at the moment had to choose between "very inferior doctoring and the out-patient departments of hospitals. The doctoring is inferior and perfunctory because it is under the panel system." He criticized what he called the present condition of private entrepreneurship. Lord Listowel considered there was misunderstanding about the powers of the proposed medical practices committee. This would have no power to direct a practitioner into a particular practice. The function of the committee was negative rather than positive. It would, in fact, be performing the functions of an appointments board or employment agency. It had power to refuse a doctor admittance to certain parts of the country, but there was the safeguard that a doctor whose application was refused had a right of appeal to the Minister.

Many useful facts and opinions came out of the Lords debate, in which slogans and gladiatorial displays were conspicuously avoided. But the temperature of debate is likely to rise in the Commons. Letters to this *Journal* show that medical men dislike the general tenour of the Bill, and constructive criticisms will no doubt emerge at the Special Representative Meeting next week.

PASTEURIZATION DEFERRED

The House of Lords continues to show a lively interest in health matters, and in a debate a fortnight ago brought to the fore the difficulties of providing the people of this country with a sufficiency of safe milk. In a maiden speech Lord Rothschild "rose to call the attention of His Majesty's Government to the urgent need for the compulsory pasteurization of milk in as many parts of the United Kingdom as is practicable"—a motion which Lord Ammon subsequently said the Government was prepared to accept. Lord Rothschild put the yearly number of deaths from drinking tuberculous milk at 1,600, and the number of casualties at between 7,000 and 8,000—casualties which required "months of hospital treatment and were a source of misery and anxiety to their families and great expense to the State." He referred also to other milk-borne infections, such as undulant fever, enteric fever, dysentery, food-poisoning, scarlet fever, and diphtheria. He discounted the objection that pasteurized milk has an unpleasant taste; and to the objection that pasteurization takes "the life" out of milk he remarked it was true that heat treatment did take the life out of the noxious bacteria so often present in it, although he doubted whether those who put forward such statements meant them in this sense. The view that destroying noxious germs would prevent the population from acquiring a natural immunity to disease was one which he thought would not appeal to the mothers of children who have died from bovine tuberculosis. And he went on to ask why we did not drink water contaminated with the germs of enteric fever. Lord Rothschild proposed that compulsory pasteurization should be instituted in towns of more than 20,000 inhabitants.

Lord De La Warr, speaking from the agriculturist's point of view, said that it was for them, as producers, to supply the nation with the milk the medical profession said would be best for the national health. He drew attention to the position of the producer-retailers. There were about 50,000 of these in the country, and they handled about 20% of the milk supplied, mostly for small or urban communities or rural communities outside the range of the large distributor. If the Government tried to quicken the pace of cleaning up the milk supply delivered by this section of the trade the effect might be to drive these men out of business and so deprive the community of a large quantity of milk. He therefore considered that they should tackle the problem of cleaning up the herds and the farms of the producer-retailer, and, in their case, "provided that the milk is clean I can see no very great reason for pasteurization at all."

Lord Bledisloe, speaking with wide knowledge of the whole subject of milk, observed that the main advantage of improving the health of dairy cattle was to increase the yield of milk. The milk yield of a cow in this country was less than 500 gallons a year during the lactation period, as compared with 750 to 800 gallons in countries like Denmark, Finland, and Holland; and the consumption per head per day was less than that in most civilized European countries. Although 40% of the country's cattle reacted to the tuberculin test, they should, he said, at the same time remember that only one-half per cent. of dairy cattle yielded tuberculous milk. He agreed with Lord De La Warr that pasteurization was not an alternative to the improvement of animal health, but complementary to it. He thought that the opposition of some stock-owners to pasteurization would disappear if the Government would give a firm assurance that they would actively promote improvement in the health of dairy cattle as well as insist upon the pasteurization of milk so far as that was practicable. In view of the shortage of reliable pasteurization plant and of trained technical staff, he believed there was strong justification for "allowing the best milk produced on our British farms to be delivered raw to the consumer, at any rate for the present." Again, he observed that "the soundest practical measure would be compulsory pasteurization of all milk except that coming from tuberculosis-free herds and so far as practicable from herds free from contagious abortion." He also pleaded for the strengthening of the veterinary profession.

Lord Ammon said that of the annual consumption of liquid milk in England and Wales, amounting to about 1,075 million gallons, approximately 725 million were already heat treated. Of the 350 million gallons not heat-

treated about 190 millions were sold by producer-retailers, and the quantity of this up to T.T. standard was about 18 million gallons. A census carried out in 1943 in grant-aided schools and private schools participating in the milk-in-schools scheme showed that 67% of liquid milk supplied to 30,000 schools was heat-treated milk, 6.4% was T.T. milk, and the remainder accredited or non-designated raw milk. Lord Addison drew attention to the fact that the water supply to vast numbers of our farms was most inadequate, and that many of them had no electric supply. In some parts of the country it was not easy to find a farm with a well-equipped and properly constructed cow-shed. They had an immense expenditure in front of them in effecting improvements in farm buildings.

In the *Journal* of March 9 we published a table showing the death rates from abdominal tuberculosis between 1921 and 1944 in children under 5 years of age in London, county boroughs, urban districts, and rural districts. For comparative purposes these deaths give the best indication of the prevalence of bovine disease. The figures, supplied by the Registrar-General, show that the death rates have continuously declined in each year. The figures showed that in 1944 the rate for London was only one-tenth of that in rural districts, and that, compared with 1921, the 1944 rate in London was one-twenty-third, and that of the rural districts one-quarter. In other words, the decline in London has been much steeper than that in rural districts. The actual numbers of deaths in 1944 were : London 1, county boroughs 32, urban districts 42, and rural districts 37. By 1938 we may observe that in London over 98% of the milk was pasteurized, and in county boroughs over 50%. It seems undeniable, therefore, that pasteurization of milk is an important factor in controlling the incidence of mortality from bovine tuberculosis, and that the protection of the interests of the small producer-retailers means a lack of protection for the health of those who consume the milk supplied by them. If at short notice under stress we can train technicians and produce equipment for killing other people with explosives, it seems anomalous that the production of pasteurization machinery and the training of technicians should seem to be such an insuperable obstacle in the way of pasteurizing all the milk consumed in this country until that time when we can be sure of drinking milk made safe by other methods.

COBRA VENOM FOR ANGINA PECTORIS

Sublingual nitroglycerin is now generally accepted as the best drug for the relief of angina pectoris, but in cases refractory to nitroglycerin the claims made for any other beneficial drug deserve consideration. Freedberg and Riseman,[1] for instance, find that cobra venom has a limited value in refractory cases, although it is less effective than nitroglycerin in patients who responded to both drugs. In three out of five who benefited from none of the usual remedies, including nitroglycerin, cobra venom diminished the frequency of the attacks and increased the exercise tolerance. In contrast to nitroglycerin, which causes coronary vasodilatation and relieves pain by relieving ischaemia, cobra venom has an analgesic effect which masks the pain of myocardial ischaemia. The analgesic effect, with its permissive increase in exercise tolerance, may give a freedom which is bought too dearly at the cost of increased myocardial ischaemia. The high cost is shown well in an electrocardiogram of one patient in whom a standard amount of exercise caused a depression of the ST segment and anginal pain ; when sublingual nitroglycerin was given the exercise caused no ST depression and no pain ; after a course of injections of cobra venom the same amount of exercise produced the ST depression, but there was no pain.

Refractory angina may demand a desperate remedy, but this seems not just to black-out the warning light but to screw down the safety valve. Other serious objections to venom are its delayed action, the lack of maintenance of effect after a few weeks, and the suggestion from the data that the toxic dose may be only a little more than the therapeutic one.

[1] *New Engl. J. Med.*, 1945, **233**, 462.

PENICILLIN AND DIPHTHERIA

In view of the success of penicillin in the treatment of so many different infections, and of the statements sometimes made that the diphtheria bacillus is comparatively sensitive to penicillin *in vitro*, many doctors may have wondered whether penicillin might not be used with advantage for the treatment of clinical diphtheria as an adjunct to, or a substitute for, antitoxin. This possibility has recently been investigated by Ercoli, Lewis, and Moench.[1] They confirmed that the growth of the bacilli *in vitro* is inhibited by penicillin in concentrations of just over 1 unit per ml. : although this is 100 times more than is required to inhibit the growth of haemolytic streptococcus, the effective concentration is not unduly high. The lesions of diphtheria, as they occur in man, can be analysed into a small component due to actual multiplication of the bacteria in the body, and a large component due to the absorption of toxin. An experimental bacteriaemic infection can be produced by injecting the bacilli intraperitoneally in mice together with mucin, which handicaps the defence mechanisms of the host ; this type of bacteriaemia due to diphtheria bacilli is readily prevented or cured by subcutaneous injections of penicillin or by the oral administration of sulphadiazine, while antitoxin has little effect on it. On the other hand, if diphtheria toxin is injected subcutaneously into rabbits or guinea-pigs, penicillin even in high doses has little or no action in preventing the typical lesions. When a small inoculum of bacilli is injected into guinea-pigs, the course of the infection resembles that in man—that is, there is only limited multiplication of the organisms but the animals die from the toxin produced. In this case penicillin has only negligible action. Arguing by analogy from these experiments, it may be concluded that, though penicillin might possibly be slightly beneficial in prophylaxis for exposed contacts (to prevent multiplication of bacteria), it would have no appreciable value for the treatment of patients with established diphtheria. For these cases, which constitute the vast majority of those which are encountered, nothing should delay the early and ample administration of antitoxin.

We regret to announce the death of Sir Harold Stiles, emeritus professor of clinical surgery in the University of Edinburgh and consulting surgeon to the Royal Infirmary.

[1] *J. Pharmacol.*, 1945, **84**, 120.

APPARATUS AND ROUTINE FOR DIABETIC WARD-TESTS

BY

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Former R.M.O., Hertford County Hospital

Most authorities who believe that a high blood sugar (even in the absence of ketosis) is harmful to the diabetic ask for a multitude of tests, which, in a hospital devoid of "student-labour," are apt to encroach severely on the nurses' and house-physician's time. The following routine was adopted at this hospital from the method in use at St. Bartholomew's and has led to great economy of effort. The method of three-hourly tests is that advocated by Dr. George Graham, and the chart is a modification of his. I am indebted to him for his advice and permission to submit these details for publication.

Use of the Apparatus

The urine-testing room of each ward is provided with a waterbath which takes four numbered test-tube racks, the holes of which are stamped with the times of the urine tests. A 5-ml. automatic burette is also provided. This can be bought, if the need is anticipated, about twelve months in advance, but it can easily be made and calibrated in one hour from standard laboratory components, and fixed to the reagent-cupboard by spring clips, or placed on a stand. In each ward the following notices are displayed.

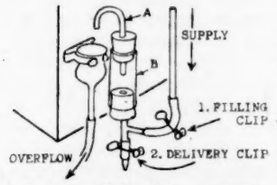

FIG. 1.—Tube B is a 2-inch (5-cm.) length cut from a thick-walled test-tube; the spring clips attaching it to the cupboard are not drawn. The supply is by siphon from a winchester bottle on top of the cupboard. When Clip 1 is opened the reagent floods the apparatus and overflows into the thistle funnel, leaving an air-lock in the upper part of Tube B. When this clip is released and Clip 2 is opened the contents of Tube A, Tube B, and the vertical limb of the T-piece are delivered. The overflow is collected in a small bottle and returned to the winchester from time to time. By vertical adjustment of Tube A the size of the air-lock may be varied until the volume delivered is 5 ml.

On Admission of a Diabetic.—The patient's bladder should be *completely emptied*, by catheter if necessary, and the specimen tested by Benedict's and Rothera's tests (and with ferric chloride if Rothera's is positive). Record results at once on patient's chart. Test further specimens in this way at the standard three-hourly intervals. Change to the waterbath method when requested.

Waterbath Method.—Each patient has his own test-tube rack, which is filled daily with a set of clean tubes. When each specimen is collected the nurse or patient should place 8 drops in the test-tube which corresponds to the time the specimen was taken; 5 ml. of Benedict's reagent should then be added from the automatic burette. When a specimen is unobtainable it is safest to remove the corresponding tube from the rack. At the appointed time see that the water *boils actively* for at least five minutes, then record the results on the patient's chart at once.

Unless specially requested, the 12 midnight and 3 a.m. specimens are not required, but (1) any specimen which may be passed should be tested; (2) *two specimens* should be tested before breakfast. (To fulfil this requirement some patients have to be awakened at 3 a.m.)

Tests for Ketones.—Test every specimen for ketones until these instructions are modified by the house-physician. If Rothera's test is positive, use the ferric chloride test as well (provided the patient is not taking salicylates in any medicine). Record on the patient's chart either a dash (—) or the letter R if Rothera's is positive, or the letter F if both are positive. [Details of Rothera's and the ferric chloride tests are then given.]

If these instructions are followed, time is saved in several ways. All labels, for example, are dispensed with; the times on the rack-holes identify the test-tubes, and the number at the end of the rack identifies the patient. The time-consuming mistake of filling numerous test-tubes with unmeasured specimens is also avoided. The difficulty of distinguishing a tube containing only 8 drops (the right quantity) from one which is merely wet is dealt with by adding the Benedict's at the time of putting up the specimen.

The "appointed time" of boiling the waterbath is a matter of choice. By the second day after admission the information given by a mass test once in twenty-four hours is sufficient to balance most cases. Although the ideal time for this would be at the end of the diabetic day (7 a.m.) it is quite satisfactory if the boiling of all the specimens is delayed until the morning round. The dose for the evening and the following morning is then prescribed. If at any time a patient's condition changes unexpectedly, the "story so far" can always be obtained within ten to fifteen minutes by lighting the bath, and this need not interfere in any way with the rest of the tests.

Method of Recording

A chart is used which gives a graphic representation of the diabetic day, and which has proved itself in practice. Fig. 2 shows only one of the five days which are represented on each quarto-size chart. One might suppose that the asymmetrical change of date would be confusing in an essentially practical chart, but it has been found unexpectedly convenient, starting as it does at the time the day-staff comes on duty. All the (diabetic) prescribing is done on this chart. The carbohydrate

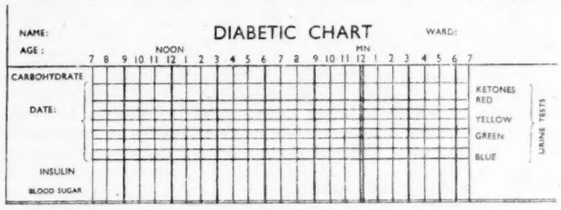

FIG. 2

can be written in grammes or in Lawrence's "black lines" (tens of grammes), if these are used. If extra carbohydrate has to be given in the form of glucose, this can be graphed and seen in perspective, as it were, when prescribing for the next day. The carbohydrate line lends itself readily to the straightening of "peaks" of glycosuria, such as occur when changing from soluble to protamine-zinc-insulin. The main advantage of the chart as a whole is that every detail relevant to the case is presented on the *same piece of paper* in its proper time-interval. This not only is convenient to the physician but also helps the patient to understand what is happening. The patient sees his "sugar rising and falling," and the insulin on one side "pulling it down" and the carbohydrate on the other "pulling it up." Just above the highest line for glycosuria is the horizontal column for the topmost calamity—ketonuria. In this disease, in which self-knowledge is of the utmost value to the patient, the use of a graph saves many words of explanation.

In closing I must thank Dr. Geoffrey Evans of St. Bartholomew's Hospital for his encouragement at all times and in the construction of the devices when I was his house-physician; also Sister Harvey, Dr. Gregson Williams, Dr. Brian Stanley, Dr. E. M. Dimock, and the sisters at Hertford for their assistance and advice.

The waterbath can be obtained in stainless steel from Messrs. David Allan, of 119, Haggerston Road, London, E.2, and the charts are printed in an attractive "ledger-ruling" by Messrs. Simpson, Shand and Co., Hertford.

HOSPITAL APPOINTMENTS FOR DEMOBILIZED M.O.s

It has been brought to the notice of the B.M.A. that there has been some misunderstanding of the position concerning resident hospital appointments for demobilized medical officers who have not been approved for appointment to B1 posts in Class I or Class III of the Government's postgraduate training scheme. It is not the case that all B1 vacancies are reserved for candidates approved under the scheme and that other demobilized doctors have no opportunity of obtaining such posts. It is true that a hospital making an appointment outside the scheme cannot obtain a grant for the purpose of raising the normal salary of the post to the amount provided under the scheme when it is less than that amount. It is true also that a post supernumerary to the approved wartime establishment of a hospital cannot be created except for the benefit of a practitioner entitled to an appointment within the scheme. But there is no question of a ban on applications from other demobilized doctors for advertised vacancies.

TRAVELLING FELLOWSHIPS IN MEDICINE

The Medical Research Council invites applications for the following Travelling Fellowships for the academic year 1946–7.

Rockefeller Medical Fellowships

These Fellowships are provided from a fund with which the Council has been entrusted by the Rockefeller Foundation of New York. They are intended for graduates resident in this country who have had some training in research work in clinical medicine or surgery, or in some other branch of medical science, and who are likely to profit by a period of work at a centre in the United States or elsewhere abroad, before taking up positions for higher teaching or research in the United Kingdom. The stipend will ordinarily be at the rate of £450 per annum for a single Fellow and of £650 per annum for a married Fellow. Travelling expenses and some other allowances will be paid in addition.

Research Fellowships in Tuberculosis

Dorothy Temple Cross research Fellowships in tuberculosis are awarded by the Medical Research Council from a special endowment of which its members are the trustees. The object of the Fellowships, as defined in the Trust Deed, is to give special opportunities for study or research to suitably qualified British subjects of either sex "intending to devote themselves to the advancement by teaching or research of curative or preventive treatment of tuberculosis in all or any of its forms." The Fellowships will, as a rule, be awarded to candidates who wish to make their studies or inquiries elsewhere than in the United Kingdom. They will ordinarily be awarded for one academic year. The Fellowships provide for the payment of stipend, together with an allowance for travelling and incidental expenses. The stipend will ordinarily be at the rate of £450 per annum for a single Fellow, and of £650 per annum for a married Fellow.

Completed applications for Fellowships of either type must be lodged with the Council not later than June 1, 1946. Further particulars and forms of application are obtainable from the Secretary, Medical Research Council, 38, Old Queen Street, Westminster, S.W.1.

Nova et Vetera

A COMMEMORATION AT BART'S

400TH ANNIVERSARY OF THE SECOND FOUNDATION

St. Bartholomew's Hospital has now been in existence for 823 years. It was founded by Rahere in the reign of King Henry I in 1123. It passed through a very severe and almost fatal crisis in the sixteenth century. About the year 1539 King Henry VIII took unto himself lands, rents, and perquisites belonging to the hospital because of its connexion with the Priory of St. Bartholomew the Great. Without going into detail, such was the parlous condition of the hospital's finance that in 1546 the Mayor, Commonalty, and citizens of London petitioned His Majesty for the restoration of the rights, privileges, and revenues of the said hospital, and on Dec. 27, 1546, Henry VIII granted the petition by "letters patent," thereby restoring the income of the institution and placing the governance of the hospital in the hands of the City Corporation. Henry was at that time a very sick man, and he died one month later.

This year, 1946, is also the anniversary of several other points in the history of St. Bartholomew's Hospital. It is the 150th anniversary of the formation of the Abernethian Society, which has commemorated that great surgeon of the hospital in thi manner. It is the centenary of the introduction of chloroform for use as an anaesthetic in the hospital. It is the jubilee of the first use of *x* rays in diagnosis.

It has been decided to commemorate the second foundation of the hospital 400 years ago on Wednesday, May 8, which date is also the first anniversary of victory in Europe—VE-Day. The old Priory Church of St. Bartholomew the Great is to be used as a setting for some episodes in the history of the hospital and for a commemoration service. A procession will leave the hospital at 11.35 a.m. and will be met at the gateway of the church by a procession of clergy. All attending will be in their seats by 11.45, soon after which the King and Queen will arrive to honour the commemoration with their presence.

Mr. W. McAdam Eccles, senior consulting surgeon to the hospital, has taken an active part in the arrangements for the commemoration, which include a reception in the hospital square and an address on the history of Bart's in the afternoon. It is also hoped that there will be a historical exhibition from 10 a.m. to 5 p.m. on Tuesday, Wednesday, and Thursday of that week. Any inquiries should be addressed to the hon. secretary of the Commemoration, St. Bartholomew's Hospital, London, E.C.1.

Correspondence

The Health Service Bill

SIR,—May I plead, even now, that every member of the profession should take the trouble to read the unabridged Bill itself before undertaking to approve or criticize it? We are supposed to be a learned profession, yet how many of us behaved like educated beings and made the effort to read the Bill and digest it before discussing it? Your correspondent Dr. A. A. Vickers (April 13, p. 584) is generous to assume that speakers who uttered misleading statements had "misread" the Bill; more probably they had not even seen it. At a recent meeting of all practitioners in this district it was indeed "nauseating" (to quote Dr. Vickers) to observe how ill informed several speakers were. Some had not even read the over-optimistic "Summary"; others had swallowed the whole thing—"hook, line, and sinker." (Because it called itself a "Bill for a National Health Service" therefore it must be good.)

I am sure, myself, that if every doctor reads this Bill complete, he will realize with growing understanding just what it is that it sets out to achieve: not to achieve an improved medical service (the B.M.A. has been pressing this for years unheeded); but to ensure total control of both doctors and hospitals. Every "doctor" worthy of the term wishes to improve the services rendered to his patients, but this Bill does not even pretend to do so. It is nationalization from first to last, and what is to happen when once this is achieved is nobody's business.

Finally, here are two practical suggestions. First, let the B.M.A. at once produce an *accurate* summary of the Bill, designed to show how much of it is concerned with improvement of service and how much with control or finance. Secondly, let every member of the profession obtain for himself a copy of the Bill and make it his business to master its contents. He will then be able to discuss it intelligently.—I am, etc.,

Dartford. G. F. TRIPP.

SIR,—If we are to have much hope of improving the National Health Service Bill the pressure must come eventually from the people and not from the doctors. So far the B.M.A. has failed to impress public opinion, largely because the Council has, quite rightly, been engaged mainly in discovering how far the various provisions in the Bill agree with or differ from the broad Principles laid down. In practice I find that the implications of these Principles are not understood by many doctors, while to the general public they are unintelligible. Emphasis on them merely serves to convince the public that this is, as many papers try to suggest, just a quarrel between the doctors and the Government and that it does not affect the public intimately. I believe that if our influence is to have much effect we must go below the broad Principles to the fundamental issues underlying the Bill, and there, I think, we shall find material enough to interest and even excite many who are at present apathetic.

May I say at once that I write as one whose ideal has been that British medicine should be the best in the world, that it should be as fully available as possible to everyone, and that it should be available without fear of doctors' bills. Yet I find myself utterly opposed to the present Bill for its methods and not its aims. What follows inevitably over-simplifies matters, but I believe that basically the statements are correct, and I hope that at the Special Representative Meeting on May 1 and 2 many of them will be discussed and clarified.

First of all, with the ostensible aim of abolishing doctors' bills, I find that the Bill contravenes nearly every principle for which trade unions have fought for the past half-century: (1) Freely negotiated settlements. (2) Good and acceptable

conditions for workers. (3) Removal of economic pressure. (4) Removal of the threat of Government pressure (cf. the repeal of the Trade Disputes Act). (5) Liberty of the worker to choose his job, to offer his service to whom he will, to choose his place of residence, and to benefit from the results of his labour.

This country has just fought a war to vindicate the rule of law instead of the rule of force in international affairs, yet this Bill is founded on the use of force and its twin brother confiscation. The forcible taking over by the Minister of all hospitals and their endowments is an act of confiscation only to be paralleled in British history by the Dissolution of the Monasteries, and without any of the justification there may have been for that measure. That the professed aim is to improve the hospital services should not blind us to this fact of confiscation, and the further fact that it would form a precedent for the sequestration by the Government of any and every private benefaction, even the National Trust itself. Only the willing consent of all the governing bodies could make such an act lawful (I do not say legal), and this emphasizes that the future service must, in fact, be established voluntarily and not by the use of Government force.

My next trouble is that the Bill plainly aims to establish a State monopoly for medicine in spite of a few fair words about private practice, for it creates conditions in which such practice cannot do anything but languish. Now a monopoly of medicine is the worst of all State monopolies, except perhaps of religion, for it affects the whole man—body, mind, and largely spirit too—while other monopolies affect but one aspect of his physical or intellectual life. Such a monopoly we and the public must resist to the utmost.

The main urge for a national medical service seems to derive from Assumption B of the Beveridge report, which stressed, among other things, the necessity for improved control of certification. The Bill makes only one small reference to certification (Clause 33 (2) (d)), for all the rules are to be laid down by regulations of the Minister. As sickness absence is now about twice the pre-war level, mostly, I believe, justifiable, and the Social Security Bill allows for only a 20% increase, it does not need much imagination to visualize what sort of regulations these will have to be to close the 80% gap. The welcome return of some millions of healthy workers will, of course, tend to diminish this figure, but the effects of war strain and the re-employment of married women may largely offset this advantage.

That these fears are not groundless is shown by the following fact. In a Bill marked by extraordinary vagueness in nearly every part there is one clause which is full and explicit in every detail—that concerning the prohibition of the sale of practices. The whole clause is worthy of serious study, but I quote one passage only: ". . . proceedings for an offence under this section may be brought either within one year from the date of the commission of the alleged offence or within three months from the date on which evidence sufficient in the opinion of the Minister to justify a prosecution for the offence comes to his knowledge, and for the purposes of this subsection a certificate purported to be signed by the Minister as to the date on which such evidence as aforesaid came to his knowledge shall be conclusive knowledge thereof." Note the last few words; there is no security for the individual except the long process of the law, but the statement of the executive may not be checked or questioned. This is a sample of the regulations that may be expected from the Minister, which, indeed, many of us would expect from this Minister, and if the doctors and the public accept the Bill in its present form we have said good-bye to the freedom of the profession and the liberty of the subject. I believe that all the purported aims of this Bill could be obtained much better by co-operation than by compulsion and at less cost, and we must always remember that the exercise of ordered freedom is an essential part of health, of communities as well as individuals.—I am, etc.,

Winsford, Cheshire. W. N. LEAK.

SIR,—The B.M.A. statement on the National Health Service Bill, Dr. Hill's recent speeches, and much of the correspondence on the same subject oppose the Bill mainly on the grounds that it introduces a salaried State service. I have just spent six years in the R.A.M.C., which is a salaried State service, and while like most officers I found much to criticize, there was also much that was good, in particular the absence of the monetary relationship with patients, which gave a feeling of freedom in treatment never experienced in general practice before the war. It seems to me that the objections advanced against a salaried service have not as much weight as is commonly attributed to them. There appear to be four main ones, to all of which counter-arguments can be offered.

(1) Loss of incentive.—Pursued to its logical conclusion this argument means that the private patient receives more attention than the panel patient, a suggestion which is always vehemently repudiated. Does not a general practitioner increase his income just as often by buying an extra share as by increasing the number of his patients? Is it not true that usually our work occupies our time so completely that any substantial increase is impossible? Loss of incentive is not a necessary accompaniment of all salaried services. Why should it be so in medicine?

(2) Loss of patient–doctor relationship.—(*a*) Choice of doctor; is not this a limited privilege even at present? And how often is the choice exercised by change of doctor? Need a salaried service, then, exclude all choice of doctor? (*b*) Certification; the objection that this would be exercised in the interest of the State and not of the patient is a slur on our professional integrity which is unwarranted. Even in the Army, where the primary object is admittedly the efficiency of the service, it is still possible for a medical officer to look after the interests of his men and be trusted by them. Furthermore, would not this objection with regard to certification apply equally in a service remunerated by capitation fee?

(3) Loss of professional freedom and responsibility.—On my Army experience again I would say that this does not necessarily follow; I certainly never found it so.

(4) Direction.—The proposals in the Bill for distribution of practices are complicated and unpleasant. Direction exists, of course, at present based on demand and supply. Could not this be continued by advertisement in the journals of vacancies as they occur in the various areas, application being made to local medical committees, who would then fill the appointments? Similar provisions could be made for assistants.

For my part, then, I feel that opposition to a National Health Service should not be based mainly on the grounds that it introduces—immediately or remotely—a salaried State service. In fact I would suggest that it is opposition on these lines which has led to the much more unsatisfactory proposal in the present Bill for the payment of general practitioners. There are, however, many other points in the Bill, apart from those related to this question of salary, which would detract from the efficiency of the service whether salaried or not, and which must be strongly opposed. They have already been indicated in the B.M.A. circular and in the journals; the most important are: organization and administration as three separate services; local government (clinic, domiciliary, and welfare) services; family practitioner service: health centres, status of assistants, distribution of practices. I suggest that action to amend these points is much more important, will command greater support, and be more likely to be successful than opposition based on objection to a salaried service.—I am, etc.,

Neston, Cheshire. K. COBBAN.

SIR,—One of the dangers of the National Health Service Bill is that it may lead to the complete split of the general practitioners into two groups: those employed by the State and those employed privately. Admittedly the Bill states that private practice will be permitted for those joining the service, but a principle is involved here which has received far too little attention. Many doctors think that because they do private and panel practice now, it will be equally reasonable for them to do private and State practice in the future. They forget that panel practice is limited to those under a certain income; and that doctors who agree to do panel work should attend those patients who are entitled to the panel in the scheme and not outside it. In the new Government service there will be no income limits, and therefore if doctors choose to join it they should attend their patients under the terms of the service and not follow the bad principle of attending them outside it for a private fee.

From a political point of view it may be desirable to create a new type of general practitioner—i.e., one who is paid by

the State and is under its control, and from whom anyone could obtain free treatment. From a medical point of view it is an unwise step to take at present, for it will lead to a relative shortage of doctors, since the majority of them now do both panel and private practice.—I am, etc.,

London, W.8. H. STEPHEN PASMORE.

SIR,—The report (April 6, p. 535) of the excellent address by Dr. Guy Dain to the meeting of Bournemouth practitioners contained a misprint, or else Dr. Dain made a most serious error. He referred to a population of over 40,000,000. In the National Insurance Bill, 1946 (Report by the Government Actuary on the Financial Provisions of the Bill, page II, Table V), the population is given as 48,200,000. The importance of this figure is, of course, in connexion with remuneration. The estimated remuneration for the G.P.s, chemists, dentists, and supplementary eye services is £45 million (National Health Service Bill, page III)—that is, 18s. 8d. per head per annum, or 4.3d. per person per week for the four services.

What proportion of this will the general practitioner get? Would one be far wrong in saying that it will be £30 million for the doctors and chemists (as proposed in the Coalition White Paper of February, 1944) and £15 million for the dentists and ophthalmic services? Dividing the £30 million in the proportion now obtaining in the present N.H.I. scheme would give £23½ million to the general practitioners and £6½ million to the chemists. The sum of £23½ million represents for 48,200,000 people a capitation fee of 9s. 9d. per annum or 2¼d. per week, by whatever method it may be paid. As a comparison I would take the National Insurance Bill, 1946 (p. 7). where the cost of administration is given for employed men and women as 5.0d. per week, whereas the general practitioner is offered less than half this amount and out of that has to pay all his expenses—surgery, equipment, clerical, postages, telephones, motor-car, and locumtenent during holidays and illnesses. May I also point out that the service contemplated in the Bill is a 24-hour-a-day service, 7 days a week, 365 days a year.

By all means let us fight for Principles, but let us not forget that we cannot live on Principles, and that it is high time that the report of the Spens Committee was forthcoming, with the Ministry of Health pronouncement on that report, so that we know exactly where we stand.

May I emphasize what Dr. Nigel Cridland said in his letter (p. 541) and recommend that every member of the profession should read the Bill itself and not the highly glossed and polished summary.—I am, etc.,

Rhyl. J. G. MACQUEEN.

SIR,—I attended the meeting in Wimbledon and heard Dr. Hill's magnificent exposition of the Bill; but while I am 100% opposed to it, as thousands of other doctors are, I feel we, as a profession, are being destructive and not constructive. Some form of reconstruction is necessary, but what proposals have been put forward by our profession as a whole? As I pointed out in a previous letter, once the Bill such as now drafted comes into force the doctor—whether G.P. or specialist—becomes nothing more than a puppet of the State and his individuality and his personality are gone for ever.

The public do not want the Bill, the doctors do not want it, because both parties realize that "mass production" in medicine does not benefit the patient. If one associates outside one's own sphere to any extent the cries of the panel patient are heard long and loud in the wilderness, that because they are "panel patients" they don't get "good attention." How can they, when a G.P. can have a panel of 2,500 with a grandiose remuneration of 7s. 6d. (more now, granted) *per caput* per annum? Yet the proposed Bill makes the 40,000,000 inhabitants of Britain "panel patients."

Certain reforms are necessary, the main ones being the hospitals. One has merely to look at the "palaver" that is necessary to get a patient into hospital. A G.P., perhaps of 20 years' or more experience, wants to get a case of strangulated hernia admitted. He has to ring up the house-surgeon, who invariably is a young man just qualified, who questions the diagnosis, asks the pulse rate, and inquires if the patient is vomiting. After securing this information he goes away "to see if there is a bed," and it remains to his whim either to admit or to refuse admission to the patient. Such a state of things should not prevail. A doctor with experience should not be cross-questioned on such details. He would not seek to get the patient admitted unless he considered it a hospital case. Let the State control the hospitals. The voluntary hospitals seem always in debt, and there exists little or no free hospital treatment to-day, because when a patient is admitted to a public ward an almoner appears and seeks to know the unfortunate patient's income, his outgoings and so on, and how much he can pay. Surely if a panel patient gets free treatment when at home he should get specialist treatment free in hospital.

I should like to put forward suggestions for modification of the Bill: (1) Hospitals to be taken over by the State and free treatment given to persons who avail themselves of the State service. (2) The panel system to be extended to persons with a salary not exceeding £750, with full liberty to "contract out" of the system if so desired on a basis of the "own arrangements scheme" at present prevailing. Persons with incomes over £750 to be permitted, if they so desire, to join the service. (3) The panel to be limited to 1,000 persons with a decent capitation fee—say, 15s. or £1 *per caput*. (4) Doctors to be free to join or resign from the State service. (5) Doctors to be permitted to do part-time State service and carry on their private practices independently. (6) Free sale and purchase of practices (private) to continue. (7) Where no central clinic is available doctors to get extra payment for the use of their surgery, etc., when compelled to see patients in their own houses. (8) Midwifery to be done by any practitioner and remunerated by the State.

The above are not meant to be comprehensive but a basis for a plan or scheme to be amplified and submitted to the Minister. We do not, as Dr. Hill says, want to talk about "striking," but this is the time in the history of our profession when, more than ever, unity is strength, and if our disunited profession will stand together in this hour of crisis—as Britain did in 1941—we can become victorious, knowing we are acting in the best interests of our profession and of the patients who rely on us to give our best to them.—I am, etc.,

CHARLES J. DE VERE SHORTT,
Barrister at Law.

London, E.C.

SIR,—As I left the meeting of my Branch, which had just approved by an overwhelming majority the Council's report, I overheard one member say to another: "The trouble with us is we can't trust each other." Cynical, perhaps, but how devastatingly true!

At this the most critical time in the long history of our profession we do not trust each other. The average man does not whole-heartedly trust the Negotiating Committee or the Council and the Representative Body of the B.M.A., though he is largely responsible for the constitution of these bodies. He thinks along these lines: "They let us down last time; they will let us down again. They will compromise and appease and in the end they will accept this Bill substantially as it stands. They have never got the better of any negotiations with any Minister of Health."

Surely the time has come to face the reality of the situation while there is yet time. Let us nail our colours to the mast; let us say, "We will not work this Act." Let us convince *ourselves* that we will fight. We shall then achieve that unity without which we must inevitably suffer defeat.—I am, etc.,

W. B. A. LEWIS,
President of the
Shropshire and Mid-Wales Branch, B.M.A.

SIR,—The following points in the Health Bill require serious consideration, and efforts should be made to have them modified.

Clause 18.—Blood for transfusion and any other substance or preparation not readily available in an emergency may be made available to general medical practitioners who require them in cases of emergency, "on such terms, including terms as to the payment of charges, as the Minister thinks fit." Surely to make a charge for anything (let alone blood for transfusion) for emergency and consequently life-saving treatment is not in the best interests of efficient medical treatment. These supplies are free to hospital and specialist services, but must be paid for by the general practitioner.

Section 28.—(1) "A local authority shall make arrangements . . . for the care of persons suffering from illness. . . . (2) A

local health authority may, with approval of Minister, recover . . . charges from persons availing themselves of the services." We have here the position of, say, a husband developing pneumonia and being removed to hospital for treatment. A few days later his wife contracts the disease, but because there are no beds available in hospital she has to be treated at home. Circumstances require the local authority to help. Both recover, and if the man can afford it he has to pay for his wife's case at home; he was treated free in hospital. In other words, he has to pay for the fact that sufficient beds were not provided in hospital. The Minister evidently expects much remuneration from this section; otherwise it would not have been included. I suggest that para. (2) should be omitted from the Bill.

Section 42.—Reading the Bill, the only people from whom inefficiency is expected are those outside the hospital and specialist section, for only in respect of them is provision made for inquiry into their work and removal from the service. A tribunal of three persons is appointed which must inquire into complaints received from an Executive Council, and may inquire into complaints made by *any other person.* The offending doctor can be heard by the tribunal, and can appeal to the Minister and be heard by his representative. No provision is yet made for the accused: (1) to bring witnesses; (2) to question his accusers; (3) to be legally represented. Apparently there is no appeal from the decision of the Minister's representative. There is no appeal to the courts. The specialist services are in a much more favourable position, because no provision is made for inquiring into their work or dealing with complaints thereon from either official bodies or any other persons. As the Minister is to own the hospitals, he is certainly not going to provide for criticisms to be voiced.

Section 13.—The Regional Hospital Board and Boards of Governors, which control the specialist branch, although servants of the Crown, are expressly stated to be able to sue and be sued at law: "Shall be liable in respect of any liabilities incurred (including liability in tort)"—that is, wrongs against the person. This means that the specialist can sue these bodies for wrongful dismissal, breach of contract, and can question any of their decisions which cause him professional damage, and this can be done in the law courts with subsequent reinstatement and damages if the case goes in his favour. It is surely not too much to ask that these ordinary privileges of a British citizen should not be denied to general practitioners working the scheme.

The patient pays for the services but seems to have no say in what he wants; he is made to fit into the scheme. During the past week a notice was placed in my surgery stating that it was proposed in the new Bill that consultations should take place in a health centre. Patients were asked to express their opinion on this clause. Two books were provided: (*a*) for those who wished to attend a health centre; (*b*) for those who wish to continue as at present. The result is interesting: 136 wish to continue as at present and one wished to attend a health centre.

Regarding patients who remain outside the scheme of general medical services, are they to be permitted to take advantage of the "free" hospital-specialist services? The Minister has conceded one side of the arrangement, for he permits specialists to take private patients and treat them in hospital. A definite ruling on this point should be included in the Bill, for by denying them the hospital scheme indirect pressure could be exerted to force patients into the complete scheme. Patients remaining outside the scheme should be eligible for monetary benefits under the National Insurance Bill, and the certificates of their doctors, whether in the scheme or not, should be accepted for the purpose of securing this benefit.

Once the Bill is passed there will be very little hope of having any clauses altered; therefore arrangements should be made to try to modify or delete those which are undesirable.—I am, etc.,

Weybridge. H. GORDON.

SIR,—I would like to offer, for the consideration of my colleagues, two propositions: (1) There is no need for any interference by any person or body between doctor and patient. (2) If we refuse to enter into any form of contract except with the patient then a health service for all, paid by insurance premiums, can be achieved with advantage to all interests. With reference to (1), civil law, the G.M.C., and professional and public opinion are safeguards proved adequate by time. With reference to (2), if we continue to give medical help to all who need it and at the same time refuse to give any form of certificate, the present proposals, together with the present contractual relations between doctors and insurance committees, would cease to prejudice the interests of patients, and details of a workable scheme could be arranged.

It is quite fallacious to think that the State would pay and should therefore have control. The State does not pay; the patient would and should pay. The State merely provides collecting and distributing services (for payment) as a matter of convenience; it has no title to domestic control of a purely personal and intimate relationship.—I am, etc.,

London, W.C.1. T. J. TAUNTON.

Postgraduate Medical Training

SIR,—On reading the description (April 13, p. 581) of the new British Postgraduate Medical Federation I am astounded to find that only a part of one sentence refers to the needs of general practitioners, while several hundred words are concerned with the training of specialists. In the statement of general policy to be followed, the teaching of specialists and specialist methods come first and second, respectively, while courses for general practitioners are only third on the list.

Why do we have all this emphasis on "new specialist institutes" and "special hospitals"? It is not difficult for the embryo consultant to get his postgraduate education. There are a number of posts in various hospitals which cater for him already. The man who needs all the help is the family doctor. As Osler said, "He still does the work; the consultants do the talking and writing, and take the fees." It is very hard not to get rusty in a busy general practice. Surely the primary aim of postgraduate training is to improve the professional standard of the ordinary doctor; to enable him to make use of all the recent advances in medicine and surgery; to bring to his notice those points which may have escaped him, busy in the routine of his practice.

After all, the great bulk of the medical work in this country is done by the general practitioner. This obvious fact seems to have been forgotten by those who drew up the policies of the new federation, whose organization makes it sound like a school for specialists. Education of the family doctor should be priority No. 1 on the list and not an apparent afterthought. I wonder how many of those concerned with postgraduate teaching under this scheme will have knowledge or experience of the problems peculiar to general practice?

The other point which surprised me was the failure to mention the Fellowship of Medicine, which has been organizing postgraduate courses in London for a quarter of a century. This body has acquired a great deal of experience in dealing with the needs of doctors from all over the world. Among those who have conducted teaching under its auspices are several not without renown in the profession. It has always been able to give a great amount of information and advice on matters concerning postgraduate study in London to those who wished to know, and seemed superior to the British Postgraduate Medical School in this respect. Is all this fund of experience and knowledge to be ignored by the new federation? Let us hope that pride and jealousy will not prevent co-operation between the new and the old, for the benefit of the profession.

Finally, let us pray that the atmosphere of graduate teaching will not become too rarefied under the new order. Teaching of the specialties by the specialists for the specialists is all very well in its way, but what the country needs is better family doctors. The emphasis must be put in the right place.—I am, etc.,

Worthing. TREVOR H. HOWELL.

Rapid Replenishment of the Circulation

SIR,—Anaesthetists, surgeons, and nursing staff have every reason to regard with misgivings the hospital's "no-man's-land"; that metaphorical entanglement with its icy blasts in winter, its lifts that are not always in working order, and, above all, its echoing void of almost everything that the patient—

sometimes a patient hovering between life and death—may suddenly require. I refer to that variable space (variable with the intelligence exercised by those responsible for hospital construction) between the operating table and the patient's bed.

A woman of 50 had undergone the formidable operation of combined total cystectomy and total hysterectomy, for a growth of the urinary bladder invading the uterus. She left the operating theatre in good condition; nevertheless I had taken the precaution of placing a sternal marrow trocar and cannula in position in order that plasma might be administered by this route as soon as she had returned to the ward. In this particular case every convenient vein had been utilized for oft-repeated blood transfusions, rendered necessary because of haematuria. Suddenly, in the "no-man's-land" to which I have referred, she collapsed. Respirations had ceased except for an intermittent gasp, and the pulse at the wrist was imperceptible. Hastily summoned from the theatre and fearing that the suddenness of the untoward symptoms bespoke of cardiac arrest, I was contemplating pricking the ventricle when the anaesthetist, who had been summoned from the anaesthetic room, pronounced that he could detect a flicker in the carotid pulse. A courier dispatched to the ward for the plasma had not returned. A courier dispatched to the theatre for saline solution and apparatus was no doubt collecting the units. By a stroke of good fortune the highly efficient theatre sister (who was not on duty) appeared, and was able to produce from a stock-cupboard a bottle of saline and, thirty seconds later, a 20-ml. Record syringe and an enamel bowl. Using the syringe, I injected the saline solution into the bone marrow, and in under a minute my house-surgeon was alternating with me in the procedure with a second syringe he had fetched. In this manner we injected 1¼ pints (700 ml.) in under three minutes with remarkable benefit, that happily proved to be the turning point in her recovery.

In surgical, and no doubt in gynaecological and obstetrical practice as well, there are crises where to be of value a pint or more of fluid must be put into the circulation in a matter of minutes. On such occasions, in my submission, injection of the fluid by means of a Record syringe or syringes into the bone marrow is a method that has yet to be bettered. By means of a sternal-puncture trocar and cannula the bone marrow can be entered with a swiftness and certainty that bedwarfs—nay, bepygmies—cannulization of a radicle of the venous system. I make this statement after a very full experience culled from years of special interest in the subject, and after watching assistants trained in many surgical centres of the Empire and the U.S.A. attempting to enter a vein of a collapsed patient.

To disarm those who may suggest that I have omitted the corpora cavernosa as a ready receptor, I would say that, for reasons that are fairly obvious, considerably more than 50% of those who need ultra-urgent fluid replacement are women, and that advocates of this route are agreed that it should not be used for electrolytic solutions. There is no contraindication to injecting isotonic solution into the bone marrow.—I am, etc.,

London, W.1. HAMILTON BAILEY.

"Congenital Malaria"

SIR,—Dr. I. G. Cameron (April 6, p. 544) questions the findings of Eckstein and Nixon[1] on the grounds that positive films were only obtained three weeks after birth. He does not note that, in these infants, the spleens were already two or three fingerbreadths below the costal margin.

During three years' work in Turkey, much of which was devoted to malaria surveys, I was able to satisfy myself that in infants a splenic enlargement of two or three fingerbreadths (due solely to malaria) indicated an infection of at least two months' duration.

Regarding Dr. Cameron's suggestion that the occurrence of true congenital malaria can only be finally confirmed by demonstrating the parasite immediately after birth, van Nitsen[2] records six children either born dead, or dying soon after birth, whose spleens contained malarial schizonts. In addition, Jones and Brown[3] and Tanner and Hewlett[4] recorded undoubted cases of congenital transmission in infants born in London.—I am, etc.,

British Postgraduate Medical School, London, W.12. R. F. JARRETT.

1 Eckstein, A., and Nixon, W. C. W., *British Medical Journal*, 1946, **1**, 432.
2 Van Nitsen, *Ann. Soc. belge Méd. trop.*, 1932, **12**, 249.
3 Jones, J. L., and Brown, H. C., *Lancet*, 1924, **1**, 1058.
4 Tanner, N. C., and Hewlett, R. F. L., ibid., 1935, **2**, 369.

SIR,—I noted with great interest the "masterly touch" with which "Student No. 2" (April 13, p. 586) advanced his arguments on the problem of "congenital malaria" as presented by Profs. A. Eckstein and W. C. W. Nixon (March 23, p. 432). I do agree whole-heartedly with the plea put forward by him for a scientific investigation of the subject. The prospects of using the cephalin flocculation test as an aid in such an investigation do not seem to me to be very bright. In studying with Prof. E. W. Dennis the mechanism of the cephalin test (unpublished work), we found that this test is positive on cord blood obtained from 20 hospital cases, where the pregnancy, to the best of our knowledge, had been normal. The results were as follows:

Distribution of Cephalin Flocculation Reactions in 20 Specimens of Cord Blood from Normal Pregnancies

0	+	++	+++	++++
—	2	4	14	—

Why is it positive then? At what age does it become negative? Such questions can be answered only in the course of future research. The examination of blood films as a routine on newborn infants and their respective mothers does not seem to solve the problem, for a negative smear does not exclude the possibility of malarial infection. In the last laboratory meeting of the Royal Society of Tropical Medicine held in Liverpool on March 21 I had demonstrated an intradermal test in malaria (I.D.) prepared from chicken erythrocytes infected with *Plasmodium gallinaeceum*. A control antigen was also prepared from normal chicken erythrocytes. Both antigens were tried on malarial as well as normal individuals. This antigen seems to possess a high degree of specificity. The mechanism of the test seems to be akin to that of the tuberculin test (O.T.) in tuberculosis. Detailed results will appear in the coming number of the *Journal of Tropical Medicine and Hygiene*.

This test, I believe, could be used to great advantage in indicating whether the tissues of the newborn are sensitized to this malarial antigen through a previous infection *in utero*. At the same time it could be used on pregnant women to distinguish malarial from non-malarial mothers, and on school-children as an index of malaria endemicity of the region to be selected for this investigation.—I am, etc.,

London, W.6. J. G. MAKARI.

SIR,—I would be the last to assert that anything is "impossible," but I would like to say that I am in entire agreement with Dr. A. B. Raper and "Student No. 2" (April 13, p. 586). In malaria the incubation period, from the moment of the infected "bite" to the first appearance of symptoms, virtually connotes the multiplication of successive generations of parasites until they are sufficiently numerous to evoke a noticeable reaction in the tissues of the patient. May I suggest that in an infant a few days old this period is reached relatively early, depending largely upon the body weight as compared with that of an adult. I am afraid I should require much more convincing evidence than that produced by Profs. A. Eckstein and W. C. W. Nixon before I could be persuaded to believe in the antenatal transmission of malaria to an unborn child.—I am, etc.,

Brookwood, Surrey. H. M. STANLEY TURNER.

Resistant Anaemia

SIR,—With reference to the article on resistant anaemia by Drs. A. H. Douthwaite and R. L. Waterfield (April 6, p. 519) I would like to make the following points.

In the first place, I am somewhat perplexed by the use of the word "resistant" as a classification of the anaemias. Does it mean resistant to diagnosis or resistant to wrong therapy? I personally feel that the term "resistant anaemia" (or more accurately "resistant cell anaemia") should be confined to those anaemias in which a proportion of the cells are unnaturally resistant to hypotonic salines, such as Mediterranean anaemia, sickle-cell anaemia, Cooley's anaemia, etc.—in fact, those anaemias which show exactly the opposite characteristics to acholuric jaundice when treated with varying dilutions of saline.

In the second place, I do not agree that "chronic ulceration of the legs, or the history of such ulcerations, in association with anaemia" is always due to acholuric jaundice. I have seen at least one example in a case of refractory normoblastic anaemia.

In the third place, I am not convinced that a high colour index is a characteristic feature of the blood picture in acholuric jaundice. Whilst it certainly does occur, my impression is that it is usually about or below unity (*vide* Kracke).

In the fourth place, may I protest against the use of initials in place of disease names in published work? Finally, I would like to point out that the differentiation of these two widely different diseases would solve itself if pernicious anaemia was never diagnosed without a confirmatory marrow smear in the stage of relapse, when the two diseases could not possibly be confused.—I am, etc.,

A. G. RICKARDS,
Squad. Ldr.

Hednesford, Staffs.

Diphtheria Immunization

SIR,—May I clear up a misunderstanding. My letter (March 23, p. 445) was certainly never intended to suggest the conclusion drawn from it by Dr. Grant—namely, that "full prophylaxis resulting in a Schick-negative condition guarantees an immeasurably higher degree of immunity than can be claimed for the same inoculations without a posterior Schick test." In a long experience of this test, which is a regular feature of the immunization routine in the area where I work, it has been well established that some children, under as well as over 5, do not become Schick-negative after a full course—and, be it noted, both our doses are 0.3 ml. Without a post-Schick test these children, few though they may be, would go undetected, and their parents be misled into a false sense of security. We assume that these Schick-positive children are not immune, and we recommend a further inoculation followed by a re-test. The parent almost always acknowledges without demur the logic of this procedure. We use the Schick test as a rough criterion of response, not as an inoculation of antigen, though no doubt the minute amount of toxin introduced does play a part in maintaining immunity.—I am, etc.,

H. LYNDHURST DUKE.

Haywards Heath.

Experiments with Semen

SIR,—Mr. V. B. Green-Armytage (April 6, p. 546) attributes our inability to confirm his results following the injection of human semen into immature and spayed rodents to the use of semen of low cellular content, stale, and decomposed. On the contrary, our semen specimens were obtained less than one hour after assay and immediately placed in a refrigerator. Naturally only samples satisfactory as regards motility and cell content were used. It might be objected that the parenteral method of administration of the semen is not a fair test, and accordingly we recently concluded a new set of experiments using the method of insemination—the results were again negative. It is undoubtedly of great importance, biologically and sociologically, that there should be no lingering doubt about the possible function of the semen, and we await with considerable interest the publication of the results of Mr. Green-Armytage's recent experiments.—We are, etc.,

P. BACSICH.
A. SHARMAN.
G. M. WYBURN.

Glasgow University.

Medical Future of the Colonies

SIR,—Surely "European M.O." (April 6, p. 551) misses the point completely. The whole question of the disparity in salaries between African and European medical officers is a fundamental one. On what is this disparity based? Is it qualification? Unlikely, since both European and African doctors entering the service usually possess similar qualifications from a university in the British Isles. Is it ability? Definitely not, because as a rule it is the custom of the Colonial Office to appoint all newly recruited doctors as medical officers in the first instance, irrespective of any special training or qualification they may possess. Is it the necessity for supporting two homes? This is the explanation usually put forward. According to "European M.O." "the difference in salary grades is made to compensate the married European officer who has, of necessity, to maintain two homes. . . ." If this were the reason for the disparity in salary, then an unmarried European medical officer would be paid at the same rate as his African colleague, because the question of a second home would not arise in his case. Similarly, an African medical officer married to an Englishwoman, and who has set up a home in England, would be paid the same salary as a married European colleague. But in neither of these cases is such an adjustment in salary made. Then this question of schooling for the married European medical officer's children. This need not cost anything. For are there not free elementary and secondary schools all over England? He may, of course, elect to send his children to the more fashionable public schools, but (if I may quote "European M.O." here) "that would be from choice, not necessity." On the other hand, "European M.O." is wrong in suggesting that it is unnecessary for the African to send his children to Europe to be educated. There is a serious shortage of both elementary and secondary schools in Nigeria to-day, and university education is non-existent. There is a sort of medical school, but it grants a diploma which is not recognized by the G.M.C. or any other body, except itself.

Here, then, are two doctors both possessing identical qualifications, both more or less of the same ability, and both serving in the Colonial Medical Service—say in Nigeria—one is an Englishman, and the other an African. The Englishman's salary starts at £600, and ends at £1,200. The African gets £400 to start with, and ends up by receiving £720. There can therefore be no other possible explanation for this disparity in salary but that of racial discrimination. It is surprising that Africans enter the service at all in view of these conditions. The reason I believe they do this is that the standard of living in the country is so low that private practice, which is the alternative, is not remunerative. Can anything be done to alter the position? That depends on the persons most concerned—namely, the African members of the Colonial Medical Service. If they are dissatisfied with their position they should do something about it. Call for sympathy from "A Colonial" is well meant but ineffective. "European M.O." is not only unsympathetic, but advances the time-worn and puerile argument of the necessity for running two homes, and also by some mysterious calculation makes out that there is no inequality between the European maximum salary of £1,200 a year and the African's maximum of £720.

Nigeria has a population of about 22 millions, and fewer than 400 doctors. Might one suggest to the Colonial Office that instead of being almost completely dependent on recruitment of medical officers from Great Britain, a better way towards providing an adequate medical service for West Africa would be the immediate establishment of a medical school locally. For I am sure many of these European medical officers would much rather work at home, and be with their families, instead of going out to West Africa, where (so one is told) "the climate is bad, and the salary no better."

A final word. Is the salary offered the European medical officer as meagre as your correspondent would have us believe? It would be interesting to know how much additional income European medical officers in the Colonial Medical Service earn by carrying on private practice.—I am, etc.,

H. ORISHEJOLOMI THOMAS.

Birmingham.

Quinine for Induction of Labour

SIR,—May I, as a very junior obstetrician, be permitted to enter into the stormy controversy which has been aroused by Mr. F. Neon Reynolds's brief but precise statement on present-day orthodox obstetric thought with regard to the use of quinine for the induction of labour at term.

The letter by Dr. E. K. Mackenzie (March 2, p. 332) on this subject demonstrates a rather appalling lack of effort in the perusal of modern publications, most of which acknowledge the foetal risks associated with the use of quinine, some conceding that there is a 1% foetal mortality rate directly associated with its use. This matter has, of course, been dealt with in previous correspondence by Mr. Wilson Clyne (March 16, p. 407). Dr. Mackenzie claims that his results are

very significant as against the unsupported statement of Mr. Reynolds. Obviously Mr. Reynolds hardly thought it necessary to produce statistics to support a relatively well-known fact.

However, the tone of Dr. Mackenzie's letter suggests that he is getting at something else other than the dangers of the use of quinine for the medical induction of labour. His references to higher qualifications, maternity hospitals, and aseptic precautions are reactionary, to say the least, and in his most recent letter (April 6, p. 547) Dr. Mackenzie infers that obstetric teaching could be better done by G.P.s rather than by the recognized masters of the art. I feel sure that it would be quite an eye-opener for Dr. Mackenzie if he were to spend a few weeks in a maternity hospital and see for himself a few of the cases of obstetric malpractice which occur at the hands of the G.P. dabbling in obstetrics.

I am not suggesting that all G.P.s are unsuitable for the practice of obstetrics—far from it—but I am suggesting that they should be up to a certain minimum standard before being allowed to practise obstetrics. After all, good midwifery is a very time-consuming practice, and few G.P.s can spare the time required; hence their greatest failing in this field—namely, meddlesome midwifery. If, as Dr. Mackenzie suggests, we younger men were to be trained "in the hard school of general practice" rather than under the skilled eye of a master obstetrician, many of the mistakes which are all too commonly made would be perpetuated—surely a retrograde step.—I am, etc.,

Nantwich, Cheshire. J. KENWORTHY OGDEN.

Unusual Reaction to Penicillin

SIR,—A number of different reactions to penicillin have now been described, but I would like to submit the following account of a case I attended recently as being a most unusual reaction to penicillin.

The patient, aged 24, was admitted on March 28 suffering from gonorrhoea. He gave no history of previous reactions to injections, and had not previously had any penicillin. At midday he was given an injection of 20,000 units of calcium penicillin (intragluteally) with no untoward result. At 3 p.m. he was given a further 20,000 units. At 5.30 p.m. he started to complain of dizziness and a feeling as if he were "blown up like a balloon." There was no local reaction at the site of injection. He appeared as if drunk, with staggering, incoordinated gait and slurred irrational speech. His temperature mounted rapidly, and at 5.45 p.m. was 104° F. (40° C.). He was put to bed (with difficulty) and went into a deep comatose sleep from which it was difficult to rouse him. His temperature at 9 p.m. was 99° F. (37.2° C.).

The following morning he felt much better, but still complained of slight dizziness, and in addition had a severe headache and blurring and dimness of vision. Temperature was normal. The following day the symptoms had vanished completely, and a test dose of 10,000 units of penicillin was given. No reaction followed this, and three hours later a further 10,000 units was given without any trouble. After this the full course of treatment was completed without incident.

I should be very interested to learn if any other medical officers have noted a penicillin reaction of this nature.—I am, etc.,

MARK SWERDLOW,
Capt., R.A.M.C.

B.A.O.R.

Standardized Nomenclature and Formulae

SIR,—When I first began to learn medicine the *British Pharmacopoeia* obtained all our drug requirements. Nowadays we seem to depend to an increasing extent on large manufacturing chemical firms, who produce and advertise synthetic drugs of which the public seem to know nearly as much as we do ourselves. (When you get a black man in the heart of Africa coming and asking for "sikis-nine-three" it opens your eyes.) No one will dispute the value of these modern discoveries, but what one does deplore is the fact that every firm turns out identical products under different names. This applies notably to the sulphonamides, the barbiturates, the various endocrine products, while we have atebrin, mepacrine, and quinacrine as another instance.

Personally I find it impossible to keep pace with so many different names for the same thing—different names merely because they are made by different firms. I was discussing this recently with a well-known pharmacist in Nairobi, and we agreed that the time had come to effect some sort of standard nomenclature, which should be international if possible. Apart from the difficulty of remembering all these varieties by the doctor, it is almost impossible for the retail chemist to maintain stocks of, say, a dozen different presentations of the same drug. It would be very helpful to both the doctor and the retail chemist if it were possible to deal with this state of things by standardizing the nomenclature and the formulae.—I am, etc.,

Nanyuki, Kenya. G. DUNDERDALE.

Physical Therapy in Mental Disorder

SIR,—As a general practitioner who has at times to send patients to psychiatrists, I am distressed at not reading any explanation of the quotation in Dr. C. G. Learoyd's letter (March 30, p. 505). There is no doubt whatever of the fear of E.C.T. entertained by patients returning to hospital a second time. Apart from the humanitarian point of view, it is not a nice thought that the ratepayers' money is financing practices which are matters of terror and dread to their fellow creatures—and it must not be forgotten that these fellow creatures, because of the very nature of their malady, are the only members of the community who are incapable of voicing their wrongs and grievances.—I am, etc.,

Lamberhurst, Kent. DORRIT WATERFIELD.

Obituary

J. E. S. FRAZER, D.Sc., F.R.C.S.

Prof. J. E. S. Frazer, who died suddenly on April 15 at Cathcart Road, London, S.W., was appointed head of the anatomy department at St. Mary's Hospital Medical School in 1911. He received the title of university professor in 1915 from the University of London, and that of emeritus professor on his retirement owing to ill-health in 1940.

John Ernest Sullivan Frazer was born in London in 1870 and went from Dulwich College to St. Bartholomew's for his medical training. As a student he won distinction in athletic sports. He qualified in 1891 and then spent seven or eight years in London and provincial hospitals. In 1898 he took the F.R.C.S., but his health being impaired by infection from a wound in the post-mortem room he decided to make his career as an anatomist and was appointed demonstrator in that subject at St. George's Hospital. He transferred to King's College in 1905 and to St. Mary's Hospital six years later. As a teacher his value to the department proved inestimable, and during his period of office at St. Mary's he opened and equipped an anatomical museum which was a boon to generations of students. He was Hunterian professor at the Royal College of Surgeons in 1915–16 and examiner in anatomy for the College and for the Universities of Oxford, Cambridge, Durham, and London. During the war of 1914–18 he acted as temporary out-patient surgeon at St. Mary's.

Prof. Frazer's most important contribution to the advancement of knowledge was his textbook *The Anatomy of the Human Skeleton*, which was published in 1914 and reached a fourth edition in 1940. His *Manual of Embryology* ran into a second edition. In 1937 he revised and edited Buchanan's *Manual of Anatomy* and (with Dr. R. H. Robbins) Buchanan's *Manual of Practical Anatomy*. All Frazer's writings proclaim him a keen observer accurately recording what he has seen with the certainty of an eyewitness. His researches in embryology are well known and include eleven papers in the *Journal of Anatomy* (1915–35). He held office as secretary of the Section of Anatomy and Physiology at the Annual Meeting of the B.M.A. in Birmingham in 1911, and had been secretary and president of the Anatomical Society of Great Britain and Ireland.

Dr. ERIK D. SÖDERSTRÖM, of the Swedish Evangelical Mission, was a well-known and much-loved figure in Ethiopia, and will be missed by all who knew him ; more even by Ethiopians than by his many European friends and acquaintances. His work lay chiefly in Wallega Province ; and in Lekempt, the capital, he built his hospital and laboured for many years, the Italian occupation and Ethiopian reoccupation interrupting for seven years, during which time he worked in South Africa. Erik Daniel Söderström was born at Ringarum, Sweden, in September, 1890, and studied medicine in Edinburgh from 1910 to 1916, when he qualified M.B., Ch.B. From there he proceeded to the Liverpool School of Tropical Medicine and obtained the D.T.M., and then until he sailed for Ethiopia in 1919 he held house appointments in the Midlands. Once in Ethiopia, he, with his wife, settled down in the then little-known town of Addis Ababa for a full two years, until permission could be obtained for work in the interior. This was granted, and they set off for the west, where, in Lekempt, they did medical missionary work in primitive huts for eight years. Ras Taferi, the then Regent and now Emperor Haile Selassie, gave money for a hospital and this was finished in 1931. From then until the Italian invasion the work progressed well, but the actual appearance of the enemy brought this to a standstill, and the missionaries escaped through the Sudan to take up an appointment with the Church of Sweden at Ceza, their mission station in Zululand. Here Dr. Söderström laboured for five years. The return to Addis Ababa in 1943, the few months' work with the British Red Cross Medical Unit, and the departure once again to take up hospital work in Lekempt were joyful experiences—though it was no easy matter to pick up the threads under such altered conditions. His welcome back was undoubted—he was a father to them all and was loved by all, high and low alike. He died on Nov. 10 of complications following typhus, probably caught through a visit to the prison during an epidemic he was fighting, which carried off hundreds in the neighbourhood.—G. L. L. G.

Medico-Legal

MEDICAL MAN'S SLANDER ACTION

£2,000 Damages against Woman

In the King's Bench Division of the High Court of Justice on April 12 Mr. Justice Charles gave judgment for the plaintiff, awarding him £2,000 damages, in an action for slander brought by Dr. Arthur Henry Hennessy, of Sanderstead, Surrey, against Miss Irene Boyanton, of Sanderstead. The plaintiff's case was that the defendant made false statements about him, in which she alleged that he had made love to her and criminally assaulted her in his surgery on Sept. 26, 1944, and that he had thereby been greatly injured in his character and profession.

This High Court action was a sequel to a disciplinary inquiry held by the General Medical Council on May 31 and June 1 and 2, 1945. Dr. Hennessy had been summoned before the Council on the charge that, being a registered medical practitioner, and standing in professional relationship to a lady described as "Miss A. B.," he on Sept. 26, 1944, attempted to commit adultery with her, indecently assaulted her, and assaulted or was party to an assault upon her. The complainant was "Miss A. B." After a hearing *in camera* which lasted altogether more than eleven hours, the decision of the G.M.C. was announced in public by the President, who said that the Council found that the facts alleged against Dr. Hennessy had been proved to their satisfaction, and that in respect of the facts so proved they judged him to have been guilty of infamous conduct in a professional respect and instructed the Registrar to erase his name from the *Medical Register*.

In the High Courts on April 10, 11, and 12 Mr. Holroyd Pearce, K.C., appeared for Dr. Hennessy, and, dealing with the alleged slander, said that the words were uttered by Miss Boyanton to another doctor in Sanderstead and to a garage proprietor. "The tragic part of this case came later. Miss Boyanton set the General Medical Council in motion in 1945. Deliberate perjury before that body resulted in Dr. Hennessy being struck off." During the course of the hearing Mr. Justice Charles repeatedly referred to the defendant's "lies." He ordered the documents to be impounded to consider whether Miss Boyanton should be prosecuted in the criminal court for perjury. With reference to the action of the G.M.C. in striking Dr. Hennessy off the *Register* his lordship said: "Not having the mass of evidence which was before me, their inquiry resulted, in my firm and clear conviction, in a gross miscarriage of justice." In the course of his judgment he said that the slanders alleged were very wicked lies if they were not true. His lordship accepted Dr. Hennessy's denials and rejected Miss Boyanton's story of a criminal assault. Giving his reasons for disbelieving her allegations he pointed to the fact that throughout the relevant time one of the plaintiff's patients, with her infant daughter, had been in the waiting room adjoining the surgery, had seen Dr. Hennessy and Miss Boyanton come out and had noticed nothing unusual about them. Referring to certain evidence which had been called in support of Dr. Hennessy's case his lordship found it difficult to believe that if the General Medical Council had had that evidence before them they would not have believed it in preference to that of Miss Boyanton, for she patently lied. He must award the plaintiff substantial damages to exhibit to the world at large that he (his lordship) had not believed one single word of the slanders, and he granted an injunction to restrain the defendant from uttering any similar slanders in future. He hoped in conclusion that the G.M.C. would see their way to reinstate Dr. Hennessy on the *Medical Register*, and he undertook at counsel's request to communicate with the Council.

Universities and Colleges

ROYAL COLLEGE OF SURGEONS OF ENGLAND

A quarterly meeting of the Council was held on April 11, with Sir Alfred Webb-Johnson, President, in the chair.

The Walker Prize of £100 was awarded to Prof. E. C. Dodds, F.R.S., for his work on the synthesis of stilboestrol and dienoestrol, which has proved most valuable in the treatment of prostatic cancer. The John Hunter Medal and Triennial Prize of £50 was awarded to Dr. Joan M. Ross for her outstanding work in pathological anatomy, particularly in regard to the collection of pathological specimens illustrating injuries and diseases occasioned by the war. The Begley Prize for 1946 was awarded to Otto Fleischner of the University of Vienna.

Mr. W. Rowley Bristow was elected Robert Jones Lecturer for 1946.

Dr. G. M. Vevers, superintendent of the Zoological Society, and Mr. A. J. Durden Smith, surgeon to Mount Vernon Hospital, being members of the College of 20 years' standing, were elected to the Fellowship.

Surg. Capt. Lambert Rogers was re-elected a Member of the Court of Examiners.

It was decided to hold special courses in anatomy, applied physiology, and pathology for the Primary Fellowship Examination, September to October, 1946.

The following was set as the subject for Jacksonian Prize Essays for the year 1947: "The Surgery of the Lower Oesophagus and Cardiac End of the Stomach." The following was set as the subject for the Cartwright Prize Essays for the five years ending 1950: "The Healing of Injuries and Post-operative Lesions of the Jaws." Copies of the regulations governing the award of both these prizes may be obtained from the secretary of the College.

Diplomas of Membership were granted to J. Cox, J. R. Hawkings, and Margaret H. Pond.

Mr. Charles Leopold Mayer, of New York, who on previous occasions has given considerable sums for medical research, has awarded a prize of £1,000 to Mr. Terence Millin, F.R.C.S., of All Saints Hospital, London, in recognition of his contributions to the advancement of surgical treatment of the enlargement of the prostate. The prize was presented to Mr. Millin at a meeting of the Council of the Royal College of Surgeons on April 11.

The following lectures will be delivered at the College (Lincoln's Inn Fields, W.C.) at 5 p.m. on each day:

Erasmus Wilson Demonstrations: April 29 and May 1, Mr. L. W. Proger, Some Original Pathological Specimens from the Hunterian Collection; May 2, Mr. T. M. Tyrrell, Inflammation and Repair in the Tissues of the Eye.

Hunterian Lectures: May 9, Prof. D. H. MacLeod, Endometriosis—A Surgical Problem; May 16, Prof. B. W. Rycroft, War Wounds of the Eye and their Treatment; May 23, Prof. J. Charnley, Conservative Treatment of Fractures of the Femoral Shaft; May 30, Prof. C. G. Rob, Diagnosis of Abdominal Trauma in Warfare.

Medical Notes in Parliament

Health Bill Second Reading

The Second Reading of the National Health Service Bill will be taken in the House of Commons on April 30, May 1, and part of May 2.

HOSPITALS AND THE HEALTH SERVICE
DEBATE IN HOUSE OF LORDS

In the House of Lords on April 16 Lord MORAN drew attention to the Government White Paper on a National Health Service and moved that the House, while regretting any measures which might impair the efficiency of the general practitioners' service, welcomed proposals for the better co-ordination of the hospital services of the country. He explained that he spoke personally and not for his colleagues. He said three questions had to be answered. Was a drastic re-organization of the hospital system of the country necessary? Surveys made for the Ministry of Health during the war showed that one-third of the 93,000 beds in the 1,059 voluntary hospitals in England and Wales were in voluntary hospitals which had fewer than 100 beds each. Generally these hospitals were much too small. In too many of them major surgery was performed by men without surgical training, and the duties of physicians were usurped by those who had not the training of a physician. In municipal hospitals a more disturbing situation was found. Of 152,000 beds in these hospitals in England and Wales 78,000 were general beds, of which 29,000 were in public assistance institutions, which provided little but food and shelter.

Generally speaking, voluntary hospitals in the future would have greater difficulty in balancing their budgets, and could not begin to meet the capital expenditure required after six years in which nothing had been spent in building or equipment, or was required by the effects of bombing. The hospitals would have to call on the Government for a considerable sum of money. Such public expenditure probably meant some measure of public control. Who was to exercise that control? Every discussion among consultants and specialists who worked in these hospitals had been dominated by the fear that the hospitals would come under the control of local authorities. Because the White Paper appeared to lift that menace from the profession many consultants and specialists were reconciled to the passing of the voluntary system. Doctors dreaded being put under local authorities because the doctor had so little to say and because of the greater delays in getting anything done. Even in the R.A.M.C. during the war, under an able Director-General, the rigidity of a great service interfered with research. During a big outbreak of diphtheria at Alexandria guinea-pigs were necessary to trace the carriers, but had to be obtained as "Red Cross Comforts." It was true that doctors were working happily under the Middlesex and Surrey County Councils, but the present view was such that no statesman would dream of putting doctors and hospitals under local authorities. If hospitals were not to be controlled by these, they must be controlled by the Minister.

THE QUESTION OF OWNERSHIP

So far there was agreement between the great majority of consultants and specialists. But there was great difference of opinion in the profession on whether this control should imply the transfer of the ownership of hospitals. One view among his colleagues was that the Minister should give a block grant to a region. That block grant could be used so that any local hospital which remained backward could be made to come into line. Other sections of the profession held that if such sanctions were applied to a powerful local authority, there would in the end be a local authority majority on the Regional Board—the thing which the profession wished to avoid.

Supposing the change of ownership took place, there would be gained financial peace and the co-ordination of hospitals; and freedom from the menace that the hospitals would be put under the local authorities. The Minister of Health had refused to blunt the edge of medicine as the teaching hospitals were left alone, a thing which the profession asked in vain from Mr. Willink. On the other hand, the profession lost the voluntary system; but since almost every addition to knowledge had come from teaching hospitals and those were left intact the essence of the voluntary system was preserved. Men had chosen to work within these hospitals because they found their intellectual freedom. He himself, as Dean of a Medical School, had seen how the interest of inspectors from the University of London and the University Grants Committee seemed to disappear at the door of the pathological institute because the personality of Sir Almroth Wright had alienated the official world. If he had been in a service he would have had a thin time. Yet it was from that laboratory that penicillin came. The man of initiative should be given his head, however angular it might be. The voluntary hospital had a personality which stirred up around it a spirit of service. Was it necessary that that should be lost? Sir William Goodenough and the Secretaries of the King's Fund had proposed that within the fabric of the White Paper all voluntary hospitals should have larger autonomy and some control over their finances. He believed Mr. Bevan would go carefully into these suggestions, while not forgetting that the more the local management committee gained in power the less would be the influence of the university.

COMPOSITION OF REGIONAL BOARDS

Acceptance of the principles set out in the White Paper was always qualified by the proviso that "the composition of the regional boards is satisfactory." These regions would be able to say whether a hospital should expand and would be able to take away departments. To the professional world such powers were a matter of life and death, and doctors had repeatedly asked the Minister to reveal the composition of the regional board. Up to date he had refused that information. He (Lord Moran) now asked for it, but said he did not share the suspicion that Mr. Bevan was going to let the local authorities in by the back door and give them control of these regional boards. He believed that Mr. Bevan had learned from the experience of the Nuffield Provincial Hospital Trust, who found that the only way to make such boards work was to handpick the men. He did not think that anyone had been happy on the proposals concerning the endowments of hospitals, but he did not agree that the use of £32,000,000 sterling, not for one hospital but for more than one, merited the word confiscation. It was not reasonable that if the Minister took the liabilities of these hospitals and made himself responsible for their maintenance he should be deprived of their assets.

THE G.P.'s INCENTIVE

It was difficult to say what the general practitioner thought of the proposals in the White Paper, but there was a fairly general disquiet among practitioners for only one reason, and that was the dread that these proposals might lead to a whole-time service. General practitioners were critical of health centres and of the abolition of the sale of practices, because they regarded such things as a first step towards a whole-time service. He himself, after 25 years as Dean of a Medical School, was unable to say what effect a whole-time service would have on the practice of medicine. It was clear that such a service—without an adequate incentive—would be a bad service. It was not only the financial incentive that mattered. It was the conditions under which men worked and whether the work was stimulating. The life of a general practitioner in recent years had lost something of its colour. He had seen the treatment of serious disease pass out of his hands. Presently, there was almost certain to be a sharp division between consultants and general practitioners on the ground that if a man practised a specialty he should be trained for it. That division would take the milder degree of specialization out of the general practitioner's hands and deprive his life of interest. If his life were made duller, this would have an effect on the men who entered the profession. At present, the doctor lived for his work. Would the conditions in the White Paper attract in the future the kind of man who in the past had won the regard of the public? These questions would determine whether Parliament was working wisely for the betterment of the profession and for the good of the country. He himself had no answer to them.

Lord INMAN said he had been engaged in hospital work for 25 years at a London hospital. A number of Poor Law infirmaries had been upgraded, and there were cases where they were acknowledged to be among the best hospitals in the country. In the past, through over-lapping and rivalry, there had been cases where some hospitals had long waiting lists while close-by were hundreds of vacant beds. Changes of a radical character must be made and these changes were introduced in the new measure. He believed its purpose was a nation-wide service which would bring within the reach of everybody the best medical advice and treatment. Because that was the broad conception he would give the measure his support, while reserving the right to comment on some of the proposals. He hoped that in the transfer of institutions to regional boards care would be taken to preserve the enthusiasm and the readiness to serve which the local institution attracted to itself. He saw no reason why voluntary support should not continue, and, in fact, the measure made provision for its continuance in unpaid membership of governing bodies, regional boards, and management committees.

THE MEDICAL SUPERINTENDENT

Lord DONOUGHMORE pointed out that in the voluntary system a board elected by supporters of the hospital worked in harmony with the medical committee, meeting at the hospital, but in the municipal system the governing body was a committee of the council meeting at the county hall. The latter worked through the medical officer of health and through a medical superintendent. He did not believe such a superintendent was a wise substitute for a medical committee representing all the medical departments. He was a little frightened at an advertisement in which the Ministry of Health invited applications for posts as "Nursing Officers." These individuals were to inspect nursing and staff establishments in general, and especially at hospitals and other places for the training of nurses. He asked whether they were to work under the regional bodies or whether they were to be representatives of the Ministry of Health working independently of the regional bodies. He further asked whether the regional authorities were going to be interfered with from headquarters. If that was to be the case, the scheme would fail. He wanted to know in what spirit this new system was going to be worked.

Lord GEDDES was certain that on the composition of the regional hospital boards the well-being of the general hospital service would turn. Given proper boards and adequate finance, the co-ordination would be obtained which would bring hospital services up to a proper standard. He thought that the polyclinics, which the White Paper called health centres, would not make for confidence between patient and doctor. A secretarial service would be provided at each centre, and medical records would be kept by the servants of local authorities; men and women would be unwilling to attend because records of their maladies would pass through the hands of some not very responsible girl or man clerk. Was it not possible instead of health centres to provide diagnostic centres where experts would do *x*-ray work, laboratory investigations, etc., for general practitioners? It was possible to improve Mr. Bevan's proposals, which in many parts contained an extraordinary number of good points, though some would not make for the relations which should exist between patient and doctor.

Lord PIERCY said the general practitioner would rather be able to use aids to diagnosis under his own control at a health centre than go to a diagnostic centre such as was suggested by Lord Geddes. Under the new conditions the life of the ordinary doctor would be more interesting and stimulating than it commonly was now.

Lord LUKE said much had been heard about the taking over from the hospitals of endowments valued at £32,000,000, but not so much about the buildings, equipment, and land which were also being taken. The total value of what was being taken over from the voluntary hospitals was more in the region of £250,000,000 than £32,000,000. The voluntary hospitals had to exist for another two years as they were, because the legislation would not come into effect until 1948. He hoped that this would be made plain to donors of voluntary gifts.

VIEWS OF THE ROYAL COLLEGES

Lord HORDER thought that the motion of Lord Moran was premature. He was glad that Lord Moran made it clear that he was speaking for himself. In the previous week the Royal College of Surgeons and the Royal College of Obstetricians dissociated themselves definitely from approval of the transfer of ownership of the voluntary hospitals. Yesterday this matter came under discussion in the College of Physicians, but Lord Moran, in his speech to the House, had made no reference to the opinions of this College, over which he presided. Against this negative view of the Royal Colleges, King Edward's Hospital Fund had asserted that the success of the Bill would largely depend on spreading local interest over all the units composing the new service. It said that amendments were essential to provide for a measure of independence for the hospital management committees. The British Hospitals Association stated in the previous week that the provisions of the Bill relating to hospitals were not in the best interest of the patient and the community.

Lord WALERAN asked whether the Ministry of Health would expect the Voluntary Ambulance Service to serve the hospitals under the terms of the White Paper or would expect the St. John Ambulance Brigade to maintain its ambulances from voluntary contributions.

GOVERNMENT REPLY

Replying to the debate Lord LISTOWEL said the proper occasion for the Government to submit the case for a comprehensive health service was during the Second Reading of the National Health Service Bill in the House of Commons, and subsequently in the House of Lords. It would be an advantage to the Lords to discuss this subject again later in the session. He expressed his regret that Lord Dawson of Penn and Lord Moynihan had not been spared to offer their advice at this turning-point in British medicine. The regional hospital boards were to administer all the hospitals with the exception of teaching hospitals, and it would be a mistake for the Government to lay down in advance their exact constitution. Their size and composition must vary according to the needs of the area and to the services they would be expected to provide. The boards would consist of people chosen for their individual suitability as experts and not as delegates or representatives of different interests in the area. The only rigidity in the composition of new boards would be the inclusion on each board of at least two experts on mental health. It was unlikely that on any board so constituted the local authority members or any other distinctive group would obtain a clear majority; he could safely give this assurance to Lord Moran.

The object of the Government's proposals for future administration of the hospitals was the maximum devolution and local independence obtainable within the regional framework. Decentralization was the goal. There would be a wide field of financial autonomy. Management committees would have unfettered financial freedom within the limits of their annual budget, and no Treasury interference. Regional boards would also have moneys available from the Hospitals Endowment Fund, and any gifts from future donors, to spend at their discretion. The day-to-day running of the hospitals by the management committees would not be hampered in any way by the regional authorities.

It was a complete misunderstanding to suggest that the proposed health service would deprive the medical profession of much independence by turning its members into employees of local authorities. Even in health centres, general practitioners and dentists carrying on their practice in groups from the centres would not be employed by the local health authorities. The proposed Medical Practices Committee would have no powers for directing a general practitioner into a particular practice, but the need for a body to distribute doctors evenly throughout the country was essential to any health service which set out to cover the needs of the whole population; this had been recognized in the White Paper published in 1944 by the Coalition Government. Under no circumstances would the Medical Practices Committee be able to tell an applicant that he must go to a particular area. The committee had power to refuse a doctor admittance as a practitioner to certain parts of the country, but this procedure could not be described as direction. The Medical Practices Committee would perform the functions of an Appointments Board or Employment Agency.

THE "SLOGANS" AND HEALTH CENTRES

Lord MORAN agreed that if the regional board was trusted and was a really good board the whole scheme would work. If, on the other hand, there was interference it would not work at all. He said he was an unrepentant advocate of health centres. The reason why the motion had been brought forward was that meetings all over the country were having put before them not the considered views of people who had followed the subject on negotiating committees, but in many cases just slogans, and great harm was being done. It was imperative that somebody should try to rescue this question from slogans. Lord Horder had mentioned the Royal College of Physicians. Consequently Lord Moran read the motion passed by that College, which was:

"That the College approves the central direction and co-ordination of the general policy of hospitals provided the composition of Regional Boards is satisfactory."

That was an innocuous motion. He thought it would be perfectly frank to say to the House, however, that there was a great difference of opinion on this subject, and he thought he made it clear that he was speaking as an individual.

The motion was, by leave, withdrawn.

Voluntary Hospitals' Income

On April 8 Mr. BINNS asked what percentage of the expenditure of voluntary hospitals was provided from private sources or from public funds. Mr. KEY answered that the latest published figures available for England and Wales showed that in 1941, 36% of the hospitals' income was derived from voluntary sources, of which more than half came from income on investments and legacies; 24% was derived from public funds, and the remaining 40% from payments by patients, including payments through contributory schemes.

Compulsory Pasteurization of Milk

On April 10 Lord ROTHSCHILD called the attention of the Government to the urgent need for compulsory pasteurization of milk in as many parts of the United Kingdom as was prac-

ticable, and moved for papers. He said that if the annual number of deaths through drinking raw milk contaminated with bovine tuberculosis were put at 1,600, the number of casualties would be between 7,000 and 8,000. These casualties, which required months of hospital treatment, were a source of misery and anxiety to their families and grave expense to the State.

One objection raised to pasteurization was that it took "the life out of milk." Minor changes were brought about in the composition of the milk, but investigations in animals showed conclusively that such changes had no appreciable effect on its nutritive value. According to the National Institute for Research in Dairying the difference in composition between raw and heat-treated milk had been found to be less than that between samples of raw milk from different herds. The opponents of pasteurization also said that it destroyed the need for the T.T. and attested-herd schemes, but these schemes were directed towards improving the health of our cattle as well as towards producing germ-free milk. The heat treatment of milk was directed primarily towards improving the health of the population and reducing the unnecessary deaths each year. To the objections that heat treatment would put small producer-retailers out of business and reduce the nation's milk supply, he replied that the compulsory institution of heat treatment in towns with a population of more than 20,000 would have no effect on small producer-retailers; and far from reducing the nation's milk supply, might well cause an increase.

Earl De La WARR said it was better to produce clean milk than to kill the germs in dirty milk. But there was no doubt that the majority of medical and scientific opinion was in favour of pasteurization, at any rate of our large urban supplies of milk that had to be bulked. The Government and the Milk Marketing Board should, therefore, start with compulsory pasteurization in areas of 20,000 population or over, and then steadily extend it elsewhere to those producers and distributors who were not prepared or able to offer to the public milk of a designated standard. A reasonable period should be allowed for reaching that standard, but there should be a definite time limit. They should have to reach accredited standard in two years, something considerably above that in five years, and full T.T. and attested herd standard in 10 years. They should also make sure that the designated milk was kept separate from the rest. In the meantime we should intensify the campaign for cleaning up herds and rearing a good supply of healthy stock. Viscount BLEDISLOE emphasized the necessity for improving animal health; pasteurization was not an alternative to animal health but was complementary to it.

Lord AMMON, replying for the Government, said that their plans for better quality milk had been set out in a White Paper issued in 1943, which was strengthened by a Defence Regulation requiring a supply of clean milk in certain areas. There were 621 "rationalized" milk areas in England and Wales, and schemes to make the White Paper proposals effective, which the Government invited from dairymen, had so far been received from one-third. Shortage of plant had been a difficulty, but that was being gradually overcome and small quantities of plant were being imported. It was regrettable that more schemes had not been submitted, but a more active policy would be pursued when opportunity, labour, and plant made that possible. To encourage the heat treatment of the maximum quantity of milk the Minister of Food had, since April, 1944, paid ¼d. a gallon to milk distributors on all milk subject to that treatment. That was to be increased to 1¼d. a gallon from April 1, 1946.

Of the total annual liquid milk consumption of 1,075,000,000 gallons approximately 725,000,000 gallons were heat treated. Of the remaining 350,000,000 gallons not heat treated about 190,000,000 gallons were sold by producer-retailers, and of that about 18,000,000 gallons were from T.T. herds. An efficient system of heat treatment destroyed the germs in milk, and the Health Departments were satisfied that the food value of the milk was not thereby prejudiced. Experiments had proved that the heat treatment caused changes in milk, but they had no significant effect on its value as a food.

The motion was, by leave, withdrawn.

Health Service Bill

Replying on April 11 to Mr. Churchill Mr. HERBERT MORRISON said the Government had decided to meet the request that the second reading of the National Health Service Bill should be postponed till after Easter but felt it could only do so if the Committee and remaining stages of the Bill were not thereby prejudiced. The Government intended to complete the remaining stages in the House of Commons by the end of July. It was now understood that this would not be prejudiced by delaying the second reading.

Mr. Churchill thanked Mr. Morrison for the announcement. He said that in the Bill there were great differences of opinion, but there was also a much larger common ground of agreement on measures which were contemplated, and even advanced a considerable distance, during the life of the Coalition Government. He trusted that this business would not suffer by the postponement till after Easter.

Mr. Morrison said he recognized that there had been material changes in policy under the present Government and that it was fair that there should be discussion.

Commander GURNEY BRAITHWAITE asked whether it was intended to take the Committee stage of the Bill on the floor of the House in view of the many representations from Members on the subject. Mr. Morrison said that was a point which was usually dealt with when the House reached the second reading of a Bill.

Medical News

A general meeting of the Medical Society for the Study of Venereal Diseases will be held at 11, Chandos Street, W., to-day (Saturday, April 27), at 2.30 p.m., when a joint paper on "Neurosyphilis" will be read by Dr. W. D. Nicol and Dr. M. Whelen.

A general meeting of the Paddington Medical Society will be held at St. Mary's Hospital, Paddington, W., on Tuesday, April 30, at 8.45 p.m., when Dr. D. E. Bunbury will speak on "Recent Developments in Psychological Medicine." A discussion will follow.

A meeting of the London Association of the Medical Women's Federation will be held in the Common Room of B.M.A. House on Friday, May 3, at 8.30 p.m., when Dr. V. Mary Crosse will speak on the care of the premature baby. Coffee 8.15 p.m.

The British Homoeopathic Association has arranged a conference on "Homoeopathy and the State Medical Service" to be held at the Bonnington Hotel, Southampton Row, W.C., on Saturday, May 4, at 11 a.m. A special meeting of members of the association will be held at 2.15 p.m.

A meeting of the Medical Society of the L.C.C. Service will be held at the County Hall, Westminster Bridge, S.E., on Wednesday, May 8, at 2.30 p.m., when "The Treatment of Minor Injuries and Infections of the Hand," with special reference to bad results, will be discussed. The discussion will be opened by Mr. R. V. Lewys-Lloyd on "Fractures"; Mr. J. Gabe on "Treatment of Injuries to Tendons; Ganglions, etc."; and Mr. J. C. Gillies, on "Infections of the Hand."

A meeting of the Association of Industrial Medical Officers will be held at Manchester on May 16, 17, and 18. Private business will begin at 5.30 p.m. at the Midland Hotel, and will be followed up by a dinner at the Grand Hotel. The remaining days will be devoted to papers and study of the cotton industry. Early application for accommodation and tickets is desirable. The honorary secretary of the association is Dr. P. Pringle (Standard Telephones and Cables, Ltd., Oakleigh Road, New Southgate, London, N.11).

At a crowded meeting of the Chelsea Clinical Society on April 9 Dr. Charles Hill spoke on the subject of "Medicine and the State." He gave a very clear and forceful exposition of the problems to be decided by the profession in relation to the National Health Service Bill. Lord Horder, Rear-Admiral Sir Cecil Wakeley, and many other distinguished members and guests contributed to the discussion.

A meeting of representatives of the voluntary hospitals of London was held at St. Bartholomew's Hospital on April 15. Sir George Aylwen, chairman of the Voluntary Hospitals Committte for London, took the chair. The following resolution was passed unanimously: "That the voluntary hospitals of London, while welcoming a National Health Service designed to co-ordinate the hospital services of the country, urge the Minister to incorporate such amendments in the Bill as at present drafted as will ensure the retention by the voluntary hospitals of their property and management, their entities and their traditions, since only thus in their view can the best interests of the community be served."

H.E. Dr. Ali Tewfik Shousha Pasha, Under-Secretary to the Egyptian Ministry of Health and a delegate at the recent United Nations Health Conference in Paris, has been visiting this country for 10 days under the auspices of the British Council, to study our health services. His programme included interviews with the Minister of Health, Sir Wilson Jameson, Chief Medical Officer, Dame Katherine Watt, Chief Matron (Nursing), and other officials of the Ministry. He has also visited the London School of Hygiene and Tropical Medicine, Southwark Maternity and Child Welfare Centre, and Papworth Village Settlement for tuberculous patients.

Sir Drummond Shiels, M.B., has been appointed Public Relations Officer to the Post Office. He was Under-Secretary for India, and later Under-Secretary for the Colonies, in the Labour Government of 1929–31.

No. 14

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended April 6.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1946					1945 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	96	13	35	3	3	66	6	36	2	1
Deaths		2	1				1	3		
Diphtheria	463	36	107	46	12	453	22	116	93	14
Deaths	7	—	1	1	—	5	—	—	3	—
Dysentery	294	28	34	—	—	306	33	165	3	—
Deaths				—	—				—	—
Encephalitis lethargica, acute	1	—	—	—	—	—	—	—	1	—
Deaths		—					—			
Erysipelas			45	13	4			48	12	7
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years				20					17	
Deaths	65	17	10	7	4	76	5	14	9	1
Measles*	2,268	736	814	41	2	22,599	1688	217	60	37
Deaths	2	—	3	1	—	15	3	—	—	—
Ophthalmia neonatorum	49	6	19	—	1	67	2	10	—	—
Deaths										
Paratyphoid fever	3	—	1 (B)	—	—	3	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal	967	61	17	15	2	693	33	4	12	8
Deaths (from influenza)†	47	4	2	—	3	19	2	4	1	—
Pneumonia, primary			314	57				223	29	
Deaths		50		10	16		34		10	7
Polio-encephalitis, acute	1	—				—	—			
Deaths		—					—			
Poliomyelitis, acute	4	—	—	—	1	1	—	—	—	—
Deaths		—					—			
Puerperal fever		1	6		1		4	20		—
Deaths										
Puerperal pyrexia‡	176	11	17	1	2	157	13	13	—	1
Deaths		—					—			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,392	102	193	29	39	1,343	45	187	21	44
Deaths	—	—	—	—	—	1	—	—	—	—
Smallpox	7	—	—	—	—	—	—	2	—	—
Deaths				—	—				—	—
Typhoid fever	3	—	2	3	—	5	—	2	7	1
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	2,109	160	94	36	13	1,043	42	65	56	15
Deaths	7	3	2	2	—	6	—	1	1	—
Deaths (0–1 year)	431	64	59	38	19	387	30	62	26	19
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	5,225	820	683	237	157	4,522	604	607	218	147
Annual death rate (per 1,000 persons living)			15·0	15·2				13·8	14·1	
Live births	7,975	1129	990	377	268	6,428	664	891	370	275
Annual rate per 1,000 persons living			19·9	24·2				17·8	23·9	
Stillbirths	266	38	35			174	10	28		
Rate per 1,000 total births (including stillborn)			34					30		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* infectious diseases were slightly less prevalent during the week. The largest decreases were acute pneumonia 112, and dysentery 62, while the largest rise was cerebrospinal fever 22.

Scarlet fever notifications showed little change, and the total for the country was 1 less than in the preceding week. The chief local changes in the incidence of diphtheria were a rise in Warwickshire 11, and a fall in Northumberland 10. The largest local variations in the returns for whooping-cough were decreases in London 40, and Leicestershire 36, and an increase in Warwickshire 66.

Measles increased in prevalence in London and adjacent counties, the rises being London 61, Middlesex 54, and Kent 41. Large decreases were recorded in Lancashire 102, and Suffolk 93. The result of these opposing trends was a decline of 14 for the whole country.

Dysentery notifications increased in Surrey from 20 to 67. Other large returns were Lancashire 62, London 28, Middlesex 20, Essex 15, Leicestershire 13, Warwickshire 12, Gloucestershire 10.

In *Scotland* there were 131 more cases of measles and 22 fewer cases of dysentery. The total of 34 cases of dysentery is the smallest weekly total of recent months, and Glasgow with 14 cases was the only important centre of infection.

In *Eire* there was an increase in scarlet fever 11, enteritis and diarrhoea 10, and whooping-cough 7. Notifications of diphtheria fell by 5, and the 46 cases recorded involved 28 registration areas.

In *Northern Ireland* the incidence of scarlet fever rose by 11 cases, while there were 5 fewer cases of diphtheria.

Quarterly Returns for England and Wales

The birth rate during the December quarter of 1945 was 15.3 per 1,000, and was 1.4 below the rate for the fourth quarter of 1944 but 1.2 above the average of the December quarters 1939–43. Infant mortality was 46 per 1,000 live births and was 6 below the average of the 10 preceding fourth quarters. The general death rate was 11.3 per 1,000, being 0.3 below the rate for the fourth quarter of 1944 and 0.7 below the average of 1939–43.

In this quarter 201,760 persons were married, which is 51,880 more than in the December quarter of 1944 and 1,480 more than the average for the fourth quarters for 1939–43.

The provisional rates for 1945 give a birth rate of 16.1 per 1,000. This is 1.4 below the high level of 1944, and 0.1 below the rate for 1943. Infant mortality was 46 per 1,000 live births, and was 1 per 1,000 above the low record of 1944. The general death rate at 11.4 per 1,000 was 0.2 below that of 1944 and was the same as that for 1930, which was the lowest ever recorded. The marriage rate was 18.6 and was 4.3 above that of 1944. The natural increase—excess of births over deaths—was 197,628, the value for 1944 being 252,667 and the average of 1939–43 being 110,538.

Infectious Diseases during the First Quarter

The notifications of infectious diseases in England and Wales for the first quarter are here compared with those of preceding years:

	1940	1941	1942	1943	1944	1945	1946
Scarlet fever	13,399	16,099	14,935	26,759	26,962	19,163	16,952
Whooping-cough	7,441	44,160	18,325	23,005	26,141	19,780	20,033
Diphtheria	9,199	14,533	11,658	10,799	9,005	6,061	6,220
Measles	51,377	204,158	26,535	220,556	20,278	247,435	17,652
Cerebrospinal fever	5,093	4,332	2,412	1,287	978	968	906
Acute pneumonia	23,315	20,190	15,766	18,211	14,977	14,782	16,278
Dysentery	531	1,757	1,674	1,319	2,834	4,681	4,444
Paratyphoid and typhoid	194	238	235	175	111	140	138
Deaths from influenza in the large towns	4,568	2,217	863	1,149	1,131	692	2,156

The increase in diptheria was expected from the trend of this disease during the latter part of 1945. It appears that its mortality is also rising, for the case fatality in the large towns was 29.5 per 1,000 in the first quarter of 1945, while this year it was 31.4. Cerebrospinal fever has apparently reached a stable endemic level at 2 to 3 times the pre-war figure. Dysentery showed no improvement on the high wartime level. Although the outbreak of influenza was not very large, it was one of the worst in recent years.

Week Ending April 13

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,366, whooping-cough 1,934, diphtheria 463, measles, 2,552, acute pneumonia 871, cerebrospinal fever 78, dysentery 270, paratyphoid fever 4, typhoid 3, smallpox 3 (including 2 imported cases). Deaths from influenza in the large towns numbered 24.

Letters, Notes, and Answers

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Aitiology Westcent, London.* ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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ANY QUESTIONS?

Sodium Chloride

Q.—*What injurious effects follow the excessive ingestion of sodium chloride, and in what diseases is it contraindicated?*

A.—If salt is given in excessive amounts by mouth the irritation may lead to severe gastro-enteritis, which may be fatal. The systemic effects of excessive absorption of salt are essentially due to the rise in the salt concentration in the body fluids and the dehydration which results from the body's efforts to correct this. In severe cases there may be restlessness, thirst, frequent micturition, dyspnoea, rapid pulse, fever, and coma.

Excess of salt is contraindicated in all conditions in which there is a tendency to oedema, more particularly in the hydraemic type of nephritis and in cardiac muscle failure. It is wise also to restrict salt in hypertension, arteriosclerosis, and obesity. Salt is usually restricted in Ménière's syndrome, and in the dehydrating diets which have been used in the treatment of rheumatism and tuberculosis.

Pregnancy and Cancer of the Breast

Q.—*A nulliparous woman aged 37 had radical mastectomy for carcinoma of the breast a week ago. I now discover that she is two months pregnant. Should the pregnancy be allowed to continue? Will deep x-ray therapy affect it.*

A.—Since pregnancy and lactation favour a rapid growth of carcinoma of the breast, many believe that pregnancy prejudices the outlook in women who are suffering from, or who have recently been treated for, malignant disease of the breast. There is some difference of opinion as to whether interference with the pregnancy is justifiable in such circumstances, but the writer would advise termination in the case in question. If the pregnancy is allowed to continue *x*-ray therapy is not contraindicated providing the foetus itself is adequately shielded.

Preventing Orchitis in Mumps

Q.—*I have read that orchitis, the common complication of mumps, may have the effect of producing "... a greatly diminished fertility or even complete sterility." Can any prophylactic measures be taken at the onset of the mumps to prevent orchitis?*

A.—There is no measure which, taken at the onset of mumps, will prevent the occurrence of orchitis. Not infrequently, indeed, orchitis actually precedes the parotid swelling. Even strict enforcement of bed rest during the early stage of the illness does not ensure freedom from this complication. It has been suggested, however, that a hydrocele may form early and that it is the tension of the hydrocele plus the orchitis which encourage atrophy. In certain cases, therefore, tapping of an obvious hydrocele might minimize the risk of subsequent atrophy; such a method of treatment is worth trying in suitable cases. Fortunately, the condition is not always bilateral.

Senile Degeneration

Q.—*What are the early anatomical changes in the brain in senile deterioration, and what are the first clinical signs?*

A.—The first anatomical change to be seen in the brain in early senile degeneration is an increased argentophilia of the tissues generally—i.e., they begin to take up silver stains more readily. This proceeds to the formation of senile plaques, which are accumulations of residues of faulty metabolism in the intercellular substance in the upper layers of the cortex. At the same time there is a thickening and increased argentophilia of the intracellular neurofibrils, and the accumulation of lipoids in the nerve cells. All these changes may be found in apparently healthy though elderly patients and may be accompanied by no obvious clinical signs.

Clinically, the first symptoms are likely to be an increase in moodiness, slight irritability, and a slight though progressive deterioration of memory and intellectual powers. Originality and freshness of imagination are likely to go first, accompanied by an increasing incapacity to deal with what is novel. Failure of memory is shown first in impairment of recollection of recent events, more remote happenings being better remembered.

Teething Pains

Q.—*Teething in children is often painful. Is there any preparation—e.g., a local anaesthetic ointment—which, when rubbed into the gums, affords relief?*

A.—Some relief can be obtained by the use of menthol. A mixture of 1 gr. (65 mg.) of menthol to the ounce (28 ml.) of liquid paraffin is convenient. The mother moistens her little finger in this and gently rubs it over the affected gums.

Impotence after Head Injury

Q.—*Four years ago a healthy male aged 48 had a fracture of the skull, arm, and leg. He made a full recovery, but was off work for eighteen months. Until the accident he led a normally active sex life, but now he complains of complete loss of performance, though desire remains normal. There was no local injury to the sex organs. What treatment is advised?*

A.—Impotence is not uncommon after a severe head injury without any local injury to the pelvic nerves or the genitalia. The condition is often associated with symptoms of a psychological nature, which are the direct result of the head injury. The patient usually is anxious, shows mood change in the direction of depression, has a poor memory, and has great difficulty in concentrating. The post-traumatic state is also associated with headaches and disturbances in vasomotor regulation. The patient should be explored upon these lines before a decision upon the cause of impotence can be given.

Calcium Balance in Chorea

Q.—*It has been stated that there is a deficiency of body calcium or a negative calcium balance during chorea. Is this so?*

A.—The idea that calcium deficiency is involved in the genesis of chorea appears to have existed for quite a long time. Mutch (1934) quoted Isambard Owen as reporting in the latter half of the last century that the topographical distribution of chorea seemed to follow that of rickets. Warner (1930) suggested a parallel between rickets in infants and chorea in older children. That, however, did not, in the views of either writer, preclude a "rheumatic infection" as the primary cause. Chorea was accepted "as a special type of rheumatic infection" (Campbell and Warner, 1930). The factual evidence is meagre. Carter-Braine, Spurrell, and Warner (1929) demonstrated increased electrical excitability of the neuromuscular junction in chorea, and Warner (1930) reported low serum and cerebrospinal fluid calcium in a series of cases, the values returning to normal on recovery. On the basis of these observations Mutch (1934) treated a series of 19 cases with calcium aspirin (Coplans) in doses up to 45 gr. (3 g.) daily, so combining calcium with the conventional antipyretic treatment. He claimed rapid recovery, with an average of 17 days' treatment compared with the usual 35 days for mild and 67 days for severe cases. The cause of the "calcium deficiency" according to Warner was still under investigation, but nothing further appears to have been published.

On the other hand, Widenbauer (1935) reported (this appears to have been an incidental finding) that four cases of chorea showed marked improvement shortly after being given a yeast preparation, and suggested a deficiency of B vitamins as concerned in the aetiology. Then in 1941 Schwartzman, Dragutsky, and Rook reported that, in view of the satisfactory results with vitamin B_6—pyridoxine—in the treatment of nervous irritability

and Parkinson's disease, they tried it on three hospital cases of chorea. Early subjective improvement and rapid recovery were claimed, the duration of treatment being 18, 13, and 28 days in the three cases.

That is the position at present. Two different deficiencies are suggested. Similar effects, in small numbers of cases, are reported following treatment with calcium aspirin and with pyridoxine hydrochloride. Further observations are obviously required. The amount of calcium given—up to 45 gr. (3 g.) daily—was roughly equivalent to that in half a pint of milk. Milk would, of course, provide pyridoxine also. The correlation of chorea with poverty is accepted, and poverty, at least before the war, implied poor diet, low in calcium and other essentials. Children, and especially the poorer children, have been drinking more milk during the war years. It would be interesting to know whether the incidence of chorea has fallen.

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Alopecia Areata affecting Eyelashes

Q.—*After measles a girl of 8 had blepharitis and conjunctivitis, which cleared up completely. A few months later the eyelashes in the inner halves of the upper eyelids fell out. This happens repeatedly though there is no sign of inflammation of the lids or conjunctiva. Observation shows that the child cannot pull the lashes out, and does not finger the eyelids at all. What is the diagnosis?*

A.—The condition may represent a rare form of alopecia areata, where the eyelashes come into the circle and are thus shed in an irregular manner. If this diagnosis fits the case then the condition will improve spontaneously, although patches of true alopecia may develop on the scalp. From the small amount of information available it is impossible to go further into the question of diagnosis and treatment.

Balanitis

Q.—*A patient has persistent balanitis and attacks of herpes on and under the prepuce, recurring every three months. The prepuce is long but retracts readily. What is the best line of treatment? Would penicillin locally help? Can there be a vitamin deficiency? Would circumcision be a cure, and can it be carried out under local analgesia?*

A.—Balanitis is usually due to infection with *Treponema balanitidis*; sometimes fusiform bacilli are present as well. Accumulation of smegma and moisture tend to retard recovery. In the majority of cases ordinary personal hygiene and keeping the affected area dry are all that is necessary. Various remedies may be tried if this fails—for example, soaking in hydrogen peroxide followed by careful drying and then the application of flowers of sulphur or any mild dusting powder. Sulphanilamide powder may be used if there is evidence of bacterial infection, but should on no account be persisted in for more than five to seven days, lest the patient become sensitized. Penicillin cream (500 units per ml.) might be even more effective and is safer if available. If all these measures fail, or in any event if a radical cure is desired, circumcision should be carried out; this can be done with a local analgesic.

There is no evidence that balanitis is due to vitamin deficiency. Herpes is caused by a virus infection and is apt to recur.

Right Iliac Fossa Pain in Pregnancy

Q.—*A patient aged 28, now four months pregnant, has severe pain in the right iliac fossa. It radiates into her perineum and right leg, and is brought on by any exertion—walking, defaecation, etc. She had a Gilliam suspension and appendicectomy after her first pregnancy. The pain was first noticed during labour and after the delivery of her second child, and was worse during her third labour. There are varicose veins in the right leg. Vaginal examination reveals only tenderness in the right iliac fossa. What are the diagnosis and the treatment?*

A.—The cause of pain in the right iliac fossa both in and out of pregnancy is often difficult enough to determine clinically and it is questionable whether a diagnosis by correspondence will be of much value. Dragging on the round ligaments after Gilliam's operation does sometimes cause pain, and although this is likely to be worse during pregnancy it may also be experienced apart from pregnancy. The history is certainly rather suggestive of this diagnosis. Other possibilities which should be kept in mind are post-operative adhesions, a lesion of the right urinary tract, caecal distension associated with colonic spasm, and disease of the pelvic bones and joints, including sacro-iliac strain. Intravenous pyelography and *x*-ray examination of the bony pelvis might be worth while. It is tempting to inquire whether the pain was present before the operation and whether it constituted the indication for the appendicectomy and correction of the retroversion. If the conclusion is that the pain is due to pulling on the round ligament, a corset firmly applied should give some relief during pregnancy, and there is no reason to fear that natural delivery will make matters worse.

Inhalations for Asthma

Q.—*Do you consider that the drugs used in inhalers sold for the treatment of attacks of asthma are harmful in any way?*

A.—There is nothing inherently undesirable in treating asthma by inhalations. In fact, there is an advantage in taking the attack early, before it becomes resistant to treatment, and in lay hands inhalation is easier than injection. There are, however, at least three precautions to observe. The first is that due care is taken with habit-forming drugs, such as cocaine. It is said that there is no risk of habit formation if a 1% solution of cocaine is used, and this is an excellent astringent. The second precaution is to avoid irritants, such as high concentrations of creosote. All that is needed is ephedrine or adrenaline and an excipient. A good prescription is ephedrine 1% and cocaine 1% in 4% glucose saline. There are on the market blunderbuss preparations containing papaverine, hyoscine, atropine, adrenaline, pituitary extracts, etc.

The third precaution concerns the use of adrenaline. The usual technique of inhalation is to use a hand atomizer and to inhale for three to five minutes. This is all right with strengths of adrenaline not greater than 1 in 1,000. Recently, strong solutions of adrenaline have been employed—1 in 100 or even more concentrated—and with these the technique is quite different—only three or four puffs of the vapour should be inhaled. Patients inhaling concentrated solutions of adrenaline must be warned against exceeding this dosage. There is a real risk of adrenaline poisoning leading to anxiety, tremor, tachycardia, rise of blood pressure, and acute oedema of the lungs.

Urgency Procedure for Mental Cases

Q.—*In pre-war days the normal method of certification of people of unsound mind was that of two reports from different medical practitioners and an order from a magistrate; in cases of urgency the Urgency Order was used. I am told by the superintendent of the local mental hospital that the Urgency Order should be used as a routine. I have a patient whose case cannot be called urgent. She will not go in as a voluntary patient but she is too difficult to remain at home. I filled up the first of two certificates, but the second medical practitioner was unable to complete his because at the time of his examination there were not sufficient grounds. Now I am being pressed to have her removed on an Urgency Order. What is the normal method of removal? In this case what would my legal position be if I were to have the patient removed under an Urgency Order, when there are no grounds of immediate urgency, if legal action were taken against me?*

A.—The law concerning the admission of persons of unsound mind to institutions has not changed and must be adhered to. To use the Urgency Procedure where the patient's condition does not justify it might lay the certifying practitioner (and the superintendent of the mental hospital) open to an action for wrongful certification. The correct procedure is by petition of the nearest relative, supported by a statement of particulars, two medical certificates, and a reception order signed by a judicial authority. A person of unsound mind who is not under proper care and control may be placed under care by a summary reception order made by a justice of the peace and supported by a statement of particulars and one medical certificate. A private patient (it is assumed that the patient in

this case is not rate-aided) not living with relatives or friends may be placed under care by summary reception order made by a judicial authority on the application of the constable, relieving officer, or officer of the parish.

This does not apply to a rate-aided patient. A rate-aided person of unsound mind is placed under care by a summary reception order made by a justice of the peace. This needs a statement of particulars and one medical certificate. The same procedure may be applied to a person of unsound mind, whether rate-aided or not, who is wandering at large, or to a person who is neither rate-aided nor wandering at large but is of unsound mind and either not under proper care and control or cruelly treated or neglected. A relieving officer or constable may place a rate-aided person of unsound mind or one wandering at large in the observation ward of an infirmary; he is there visited by a justice, who may issue an order detaining him there for fourteen days. In all rate-aided cases the application for a summary reception order is made to a justice of the peace by the constable, relieving officer, or overseer of the parish in which the patient is found.

The practitioner is recommended to read the 1890 Act, or the summary of procedure which will be found in the standard textbooks of forensic medicine.

INCOME TAX

Colonial Medical Service

H. W. asks as to the position if he buys a house in this country for the use of his wife and of himself when he is on leave.

*** He will become a British resident, and will be liable to British income tax on the income which he remits to or draws in the United Kingdom. The usual personal allowance would be claimable. The position would be the same if the house were the property of the wife.

Loss on Sale of Practice

D. O. C. A. has sold his practice for £1,000 less than he paid for it some years ago. Can he claim an allowance for the loss?

*** No. The transfer of a practice is a *capital* transaction, and any gain or loss arising out of it cannot be taken into account in calculating income.

Assistant: Employment of Wife

J. M. is an assistant in general practice. His house is provided for him by his principal and some consultations will be done there. He asks, Can I claim allowance for my wife (say, £80 a year) for answering the telephone, etc., or expenses of maid for the same purpose?

*** J. M. is assessable under Schedule E and any expenses allowable must therefore be incurred "wholly, exclusively, and necessarily in the performance of the duties of the employment." We very much doubt whether he could maintain that proposition on appeal. If he can, then a reasonable amount—having regard to the time required—could be charged as an expense, whether paid to the maid or to the wife.

Resumption of Practice after Service

"INQUISITIVE" was released from the Army in June, 1945, and resumed his (specialist) practice in July, 1945. On what earnings is he taxable (*a*) for 1945-6 and (*b*) for 1946-7?

*** (*a*) On the earnings of that year—i.e., his Service pay (on the basis of a proportion of the previous year's pay) and his actual civil earnings to April 5, 1946. (*b*) On the amount of his professional profits for the year to July, 1946. Depreciation of the car can be claimed (*a*) on a proportion of £126 at 20% = £25; assuming that civil work started on or about July 5, 1945, the allowance would be 9/12ths of £25—i.e., £19, plus 1/5th—i.e., £23; (*b*) on £126 – £19 = £107 at 20%, plus 1/5th—i.e., £28.

Employee: Board and Lodging of Family

S. H. is contemplating employment at an institution. What would be the position as regards income tax if his service agreement provided for payment of a salary of £*x* plus free board and lodging for himself, his wife, and his six children.

*** The matter is not free from doubt. In the old leading case on this question the employee was required to reside on the premises in the interests of his employer, whereas in this case it is the interests of the employee which would be served by having the family residing at the institution. The cost of their board and lodging is the primary responsibility of S. H., and if the managing committee bear that cost for him it might be held that it was equivalent for income-tax purposes to a payment made on his account. S. H. is advised to obtain, if possible, the opinion of the local tax office before entering into such an agreement with the institution.

LETTERS, NOTES, ETC.

Vitamin E in Neuromuscular Disorders

Dr. M. D. WRIGHT writes from the Research Laboratories of Vitamins Ltd.: On page 420 of the *Journal* of March 16 a short summary is given of the present general opinion of the action of vitamin E in neuromuscular disorders. One admits that the desire to see clinical improvement may perhaps influence some observers into the belief that it is actually taking place, especially where the observations rest upon no objective means of measurement. The fact remains, however, that experimental animal deficiency of vitamin E gives rise to histological and grossly apparent nervous and muscular degenerations, and there is a recent study bearing on this subject, which would appear to be free from the bias mentioned. It is P. Vogt Muller's study on 90 dogs affected with distemper, and the results are best expressed in his own table (*Tierärztlich Rundschau*, 1942, **48**, 274).

Group	Treatment	No. of Dogs	No. Dying	No. Dying which showed Nervous Complications	No. with Nervous Complications which Survived	Total with Nervous Complications
I	None (controls)	30	14	10	11	21
II	10 mg. tocopherol	30	16	11	12	23
III	5 ml. wheat-germ oil equivalent in vitamin E content to dose given in Group II	30	12	3	2	5

In this case the treatment differed in its effect on the nervous complications according apparently to the form in which it was administered. The result may have been due to something other than vitamin E in the wheat-germ oil, or to some difference in the vitamin itself. In this connexion Harris *et al.* in 1944 (*J. biol. Chem.*, **156** (2), 491), showed that α-tocopherol in its natural form was 50% more active biologically than the synthetic *d-l* molecule. Whatever the underlying reason it would appear that certainly in some central nervous system lesions wheat-germ oil has a useful effect.

Intravenous Protein Hydrolysate

Mr. T. M. J. d'Offay writes from the City General Hospital Leicester: Dr. H. E. Magee in his article on nutrition (March 30, p. 475) implies that there is no protein hydrolysate manufactured in this country that is suitable for intravenous use. That is not the position. My colleagues and I at this hospital have during the last six months given "casydrol" intravenously for many types of cases, and continuously for five or six days in many instances, with most satisfactory results. The incidence of thrombosis is no higher than with saline or blood transfusion.

Xenopus Test for Pregnancy

Dr. HUGH DUNLOP (London, W.) writes: As a constant reader of your instructive "Any Questions?" I note with particular interest your paragraph on the xenopus test for pregnancy (Feb. 16, p. 262). I wish to draw attention to the eponymic title used therein—viz., that of Hogben. So far as I am aware the use of *Xenopus levis* as a test object for pregnancy was first described by C. W. Bellerby (vide *Nature*, March 31, 1934). So far as I know, Prof. Hogben has never claimed to have carried out any active work on the xenopus test for pregnancy; his work was rather on the ovulation produced by extracts of the anterior pituitary. In these circumstances I cannot believe that Prof. Hogben would wish his distinguished name to be attached to the test.

Proctalgia

ONE MORE writes: May I add my own contribution to "Another Victim" (March 9, p. 380). I would call it a *proctalgia* as it does not appear connected with either coccyx or prostate. In my own case it is always the same—by night, with a commencing dull ache in the anal canal, growing to a sickening intensity, relieved always by the removal of a hard scybalous stool from the rectum. Straining at stool is difficult owing to the pain and to a temporary non-functioning of the sphincters, and so digital removal is the answer. Past experience has shown that the pain will recur very shortly if a small faecal "nodule" is not hooked down from the recto-sigmoidal junction. I think it is a reflex spasm of the internal sphincter with pressure on small internal piles. If constipation is avoided, no attacks occur. The pain is worse than renal colic.

Diagnosis of Amoebiasis: Correction

Dr. E. M. BUZZARD (Oxford) writes: In my letter (April 13, p. 586) I misquoted the paper of Kelsall and Leishman. It should, of course, have read "25% of all local admissions for diarrhoea," not "25% of *all* admissions."